

MOTOR AGE

FOR AUTOMOTIVE SERVICEMEN

SEP 19 1940

A CHILTON PUBLICATION

SEPTEMBER 1940

IN THIS ISSUE

•
Paint Troubles -
Cause and Cure

by Bill Toboldt

•
Hydraulic Brake
Master Cylinders

by Bob Hankinson

•
Ford Transmission
Overhaul

by Bob Turner

•
Super Service Is
Good Shopkeeping

by Frank Tighe

•
Read The Reader's
Clearing House and
hundreds of other
helpful ideas.



THE NEW MOTOR AGE FOR THE MEN WHO MAINTAIN OUR 30,000,000 MOTOR VEHICLES

HE MAKES **6,000,000** CALLS A MONTH



● Month after month, the famous Hastings Tough Guy calls on your customers and customers-to-be. At the rate of 6,000,000 calls* per month he tells the story of Steel-Vent's "Tough but oh so Gentle" action. And the phenomenal rise in Hastings Sales over the last 5-year period proves this "super-salesman" is getting results.

Put this salesman on your team. Standardize on the piston ring that has won nation-wide car owner acceptance for its ability to stop oil-pumping and check rate of cylinder wear in all types of jobs, from rebore to .025 tapers.

HASTINGS MANUFACTURING COMPANY, HASTINGS, MICHIGAN
Piston Rings • Piston Expanders • Valv-Rings

*Combined circulation of The Saturday Evening Post, Country Gentleman and Successful Farming 6,397,232 copies . . . in which Hastings advertising appears every month throughout the year.

HASTINGS

STEEL-VENT PISTON RINGS

U. S. Patent Nos. 2,148,997, 2,173,409

Stop Oil-Pumping • Check Cylinder Wear



BRINGING UP BABY

THE FAMILY PRIDE and joy that sits in the garage, instead of the high-chair, is one of the household's major investments—and interests. Yet—the car that is everybody's sweetheart doesn't get much pampering. Too often, the car's good health is ignored and allowed to run down, all for the want of a little advice on how to keep an automobile fit and rarin' to go.

Last Fall, Collier's launched its now famous Preventive Service campaign to tell car owners, in simple language, how to get greater safety, comfort and economy from their automobiles. Motorists learned how easy it is to protect their investment in their cars—that *preventive service* is wiser and cheaper than *emergency service*.

It's easy, it's practical, and it pays big dividends in *satisfaction*—the satisfaction of owning an automobile you can be proud of anywhere, any time.

More P.S. articles will appear during the coming months. Watch for them in COLIER'S.

HOW IS YOUR "CAR-Q" (Answers on Page 100)

- A. What actually happens when you "give it the gas"?
- B. How does hot water affect the condition of your car radiator?
- C. What causes firing in the engine?
- D. How many places on your car need lubrication?
- E. Where is the best place to wear out your tires?
- F. What causes the distributor to do in your motor?

P.S.

PREVENTIVE SERVICE

sponsored by Collier's

FOR MOTOR CAR OWNERS

P.S. campaign

IT BORROWS LIGHT TO GUIDE CARS RIGHT



TRIFLEX-P REFLEX REFLECTOR with plastic lens

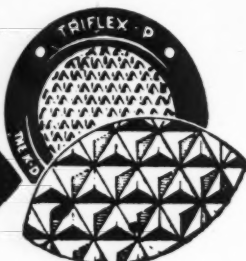


MODEL No. 333—the most effective invention in retrodirective illumination. Visible over 1/4 mile away. 3-inch red or amber lens.

32 TIMES MORE
EFFECTIVE THAN REQUIRED

REFLEXED ILLUMINATION

exceeds I. E. S.—S. A. E. or I. C. C. requirements at all points and some test points by more than 32 times.



• APPROVED

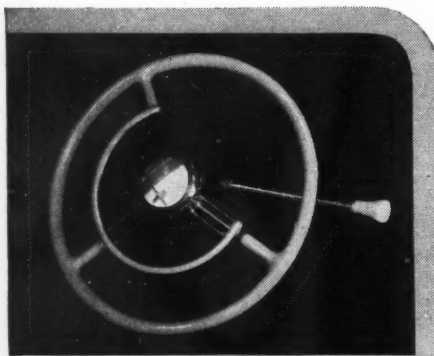
- Shatterproof
- Permanent
- Non-fading
- Tested

Get new Catalog No. 40

Members by invitation . . . Rice Leaders of the World Ass'n.

The K-D LAMP Co.
CINCINNATI, OHIO

Sinko New Exclusive Steering Post SHIFT LEVER KNOB

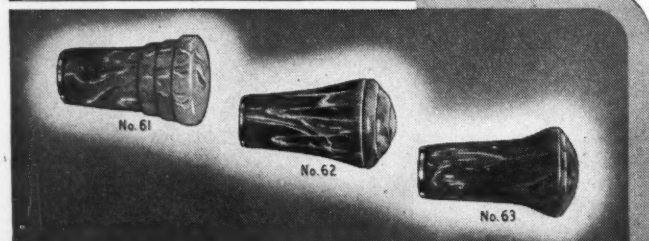


Three
distinctive
designs.

Four attractive
genuine Tenite
colors.

- No. 61 — No insert — 45¢ List.
- No. 62-C—Chrome ring —50¢ List.
- No. 63-A—Novelty Crystal insert—60¢ List.
- No. 63-C—Chrome insert—50¢ List.

Bushing required to complete installation 9¢ List.



SINKO TOOL & MFG. CO.
351-371 N. CRAWFORD AVE. CHICAGO, U.S.A.

MOTOR AGE

With Which is Combined **AUTOMOBILE TRADE JOURNAL**
FOR AUTOMOTIVE SERVICEMEN

Vol. LIX, No. 10

September, 1940

JULIAN CHASE, Directing Editor
W. K. TOBOLDT, Editor
ROBERT HANKINSON, Technical Editor
JOS. GESCHELIN, Detroit Tech. Editor
I. A. LAANMA, Merchandising Editor
FRANK P. TIGHE, Associate Editor
HOWARD KOHLBRENNER, Art Editor
E. L. WARNER, JR., Detroit News Editor
M. ATNSWORTH, Specifications Editor

In This Issue

Paint Troubles—Their Cause and Cure. <i>By Bill Toboldt</i>	18
1940 Ford Transmission Overhaul. <i>By Bob Turner</i>	20
Don't Blow Head Gaskets	23
Super Service Is Good Shopkeeping. <i>By Frank Tighe</i>	24
Repairing Batteries	26
Shop Equipment—It's Money in the Bank. <i>By James R. Lowell</i>	28
Hydraulic Brake Master Cylinder Service. <i>By Bob Hankinson</i>	30
Flat Rate Service on Packless Water Pumps. <i>By Jim Roberts</i>	32
Cartoon. <i>By Bo Brown</i>	34
Gangway for National Defense	35
Check Condensers for Good Tune-Up	36
Taking the "Shock" Out of Tires. <i>By Don Ray</i>	38
Sharpening Lathe Tools	40
What Lubricant Where?	41
Front Wheel Alinement Specifications	42
Service Hints from the Factories	44
Motor Age Shop of the Month	46
Readers' Clearing House	47
Profit Makers	55, 60, 62
Advertisers' Index	129

Copyright 1940 by Chilton Company (Inc.)

Automotive Division

Jos. S. HILDRETH, President and Manager

JULIAN CHASE, Vice Pres.

G. C. BUZBY, Vice Pres.

Offices: Philadelphia, Phone Sherwood 1424. New York City, 100 East 42nd St., Phone Murray Hill 5-8600; Chicago, Room 916, London Guarantee & Accident Bldg., Phone Franklin 4243; Detroit, 1015 Stephenson Bldg., Phone Madison 2090; Cleveland, 609 Guardian Bldg., Phone Cherry 4188; Washington, D. C., 1061 National Press Bldg., Phone District 6877; San Francisco, 444 Market Street, Room 595, Phone Garfield 1721; Los Angeles, 6000 Miramonte Blvd., Phone Lafayette 5525; Long Beach, Calif., 1595 Pacific Ave., Phone Long Beach 613-238. Member of Audit Bureau of Circulations. Member of Associated Business Papers, Inc. Subscription Price: United States and Possessions, Latin-American Countries, \$2.00 per year; Canada and foreign, \$3.00 per year. Single copies, 25c.

Owned and Published by
CHILTON COMPANY
(Incorporated)



Executive Offices

Chestnut and 56th Streets, Philadelphia, Pa., U. S. A.

Officers and Directors

C. A. MUSSELMAN, President

Vice-Presidents

JOSEPH. S. HILDRETH
EVERIT B. TERHUNE

GEORGE H. GRIFFITHS
J. H. VAN DEVENTER

C. S. BAUR

WILLIAM A. BARBER, Treasurer
JULIAN CHASE
P. M. FAHRENDORF
JOHN BLAIR MOFFETT, Secretary
THOMAS L. KANE
HARRY V. DUFFY
G. C. BUZBY
CHARLES J. HEALE

MOTOR AGE

SEPTEMBER 1940

Lubrication

Lubricants and lubrication methods have progressed at a tremendous rate since the days when they smeared the grease on the axle shaft with any convenient stick. Higher speeds, and greater bearing loads have necessitated better lubricants, each designed for a specific duty. Forty years ago, there were approximately three lubricants used on the automobiles: engine oil, cup grease and steam cylinder oil familiarly known as 600-W. Today's cars use as many as ten different lubricants. Read the article on page 41 which emphasizes the need for using the right lubricant at the right place.

Orchids

There is no need to ask how you liked the New MOTOR AGE. I was swamped with letters from all over the country, telling me how well you liked it and what a big help it was proving to be. Thanks a lot and just to show how much I appreciate your letters, I'm making this issue even better than in August and that's the way it's going to be from now on.

Mail

But between getting out the new MOTOR AGE and vacations and what have you, I have gotten a little behind in answering some of the letters to the Clearing House. I have tried to answer those which seemed most urgent, but there is a bunch that I just had to let slide. However, it won't happen again as everything is once more in a groove. So keep your shirts on if you have been waiting for an answer. The answers are now in the mail.

MOTOR AGE, September, 1940



Shop Talk

Addition

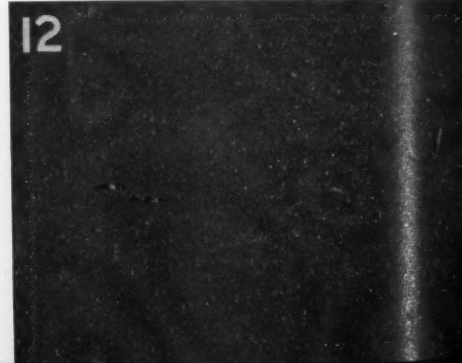
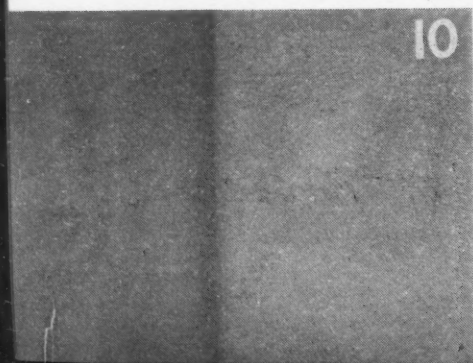
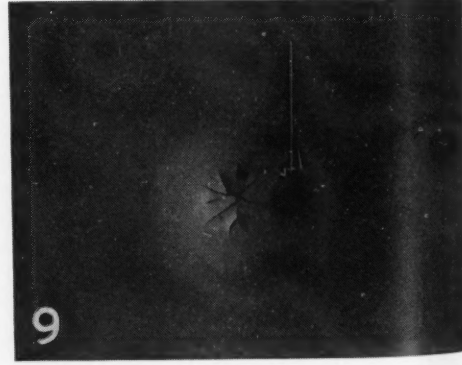
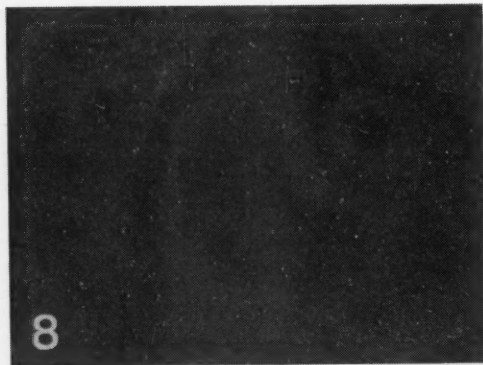
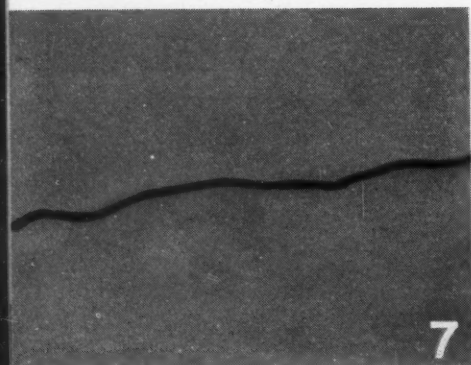
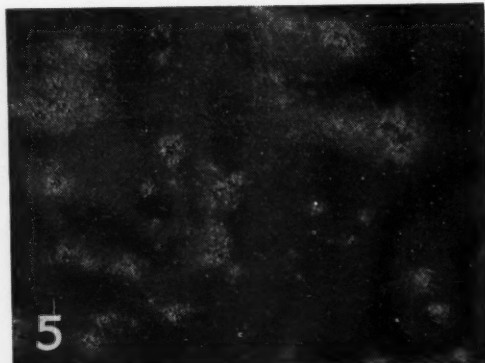
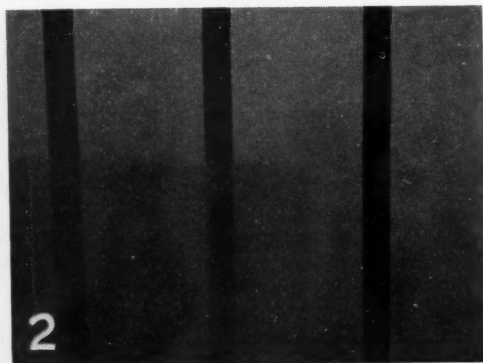
Frank Troeschler of Jersey City, N. J., and K. Poulk of Wichita Falls have sent me back to the first grade to learn simple addition. It all came about through the article "Five Bucks Per Battery" which appeared in the August issue. The total for a column of figures was given as \$17,510.79. That was a small mat-

ter of 10,000 bucks too high. Strangely enough the total was correct. The trouble was in the figure given for the amount of gasoline sold. That was given as \$1,125.22, and should have been \$11,125.22. After all, what's ten thousand bucks among friends.

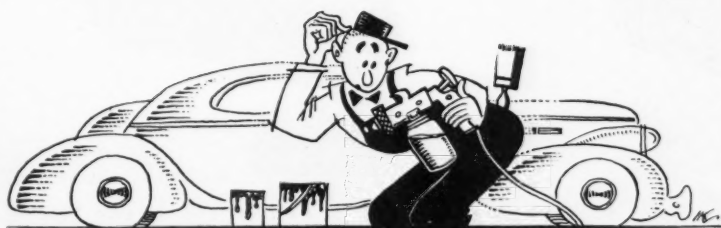
Bill Tobolsky

PAINT

TROUBLES . .



. . THEIR CAUSE and CURE



Here are illustrations of how paint jobs go sour—and why—and what to do about them

By BILL TOBOLDT

1. Shrinking and Splitting of Primer-Surfacer. Caused by (a) Improper cleaning of surface (b) Feather edging not carried back from 2 to 4 in. (c) "Piling on" in heavy coats. (d) Insufficient drying time between coats. (e) Fanning air to force drying. (f) Surface too cold when primer surfacer was applied.

2. Compounding too early. Lower left section of illustration was compounded too early. Lower section at right was compounded 4 hours after application of finish. Note how favorably it compares with original surface at top of illustration. When compounding is done too early, the compound becomes imbedded in the soft lacquer.

3. Over spray—Dry spray. This condition occurs when the finish forms a center line on cowls and turret tops. If left side of car is painted first, overspray appears to left of center line when right side is sprayed. To overcome, spray side of panel on which overspray appears with a wet mist coat made by adding several parts of thinner to the color left in the cup or it may be a straight coat of thinner.

4. Orange Peel. Caused by improper atomization or improper spraying. Compressor should supply 9 to 10 cu. ft. of air per minute with a gun pressure of 50 to 60 lb., depending on the material being sprayed. Gun should be held at right angles to the

sprayed surface and at a distance of 6 to 10 in. Gun should be moved in full, long strokes paralleling the surface and without any wrist motion.

5. Rust under film. Caused by presence of rust on surface before refinishing. Surfaces should be sanded until all rust has been removed. In most cases the use of special rust removing chemicals designed for the purpose are advisable.

6. Finger Prints. Hands should not touch the clean metal before it is sprayed. Oil from the hands will cause the condition illustrated. All surfaces should be well sanded to remove rust and grease and then washed with special chemicals before spraying with primer surfacer. Painters should wear cotton gloves.

7. Runs or Sags. This condition is caused by applying too heavy coats, the use of too much thinner or too wet coats. Material should be reduced in accordance with manufacturer's instructions and applied with a correctly regulated gun which is not held too close to the work.

8. Pinholing in Lacquers. Caused by moisture in spray lines, trapped solvents or insufficient atomization. Cleaning section of transformer should be cleaned at regular intervals and drain valve should be opened daily to drain collected moisture. Materials

should be sprayed in uniform normal coats to allow for proper evaporation of solvents. Also increase pressure of gun for proper atomization.

9. Poor Adhesion. This condition is caused by wrong undercoats or by improper preparation of the surface. The surface should be well sanded and then cleaned with special preparation designed for the purpose.

10. Chalking of Lacquers. Chalking as shown on the left side of the illustration is the gradual breaking up of the film under weathering and exposure to the sun. It results in a gradual loss of gloss and a powdering of the surface. When this condition occurs, rub and polish the surface to remove the dead pigments. Then apply wax to protect finish and prolong its life. The use of a mist coat mixed with a slower drying thinner on finishing a job will enable the film to set better and retard chalking.

11. Cracking and Checking. These conditions result when the top coats are applied before the undercoats are dry or by application of too heavy coats resulting in non-uniform drying. Always allow undercoats to dry thoroughly before spraying color. Remember that weather conditions will alter drying time.

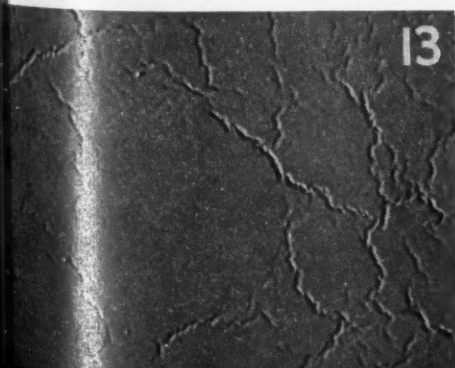
12. Rough D'irty Finish. This is caused by applying finish over a dusty surface. Surface should be wiped with a tack cloth before spraying in order to remove all dust.

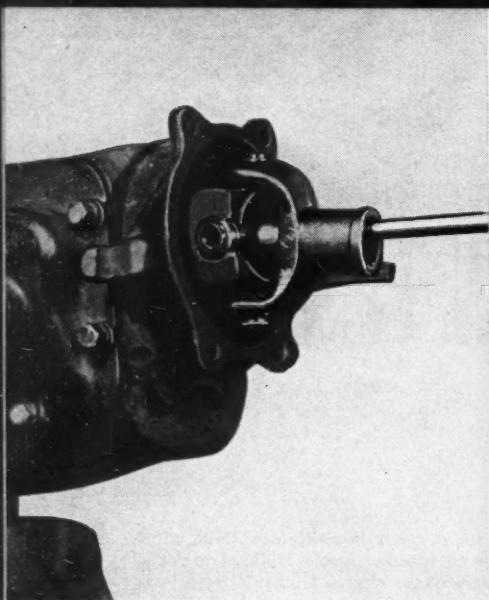
13. Lifting. This failure is caused by spraying finish over a surface from which all the wax had not been removed. Surfaces must be well sanded, feather edged and cleaned with special preparations to remove wax and grease. Improper re-coat time may also cause lifting.

14. Shrinking and Splitting of Putty. Because putties usually dry quickly, they may shrink, split and remain soft when applied too heavily. Putties must be applied in several light coats with a glazing knife or squeegee.

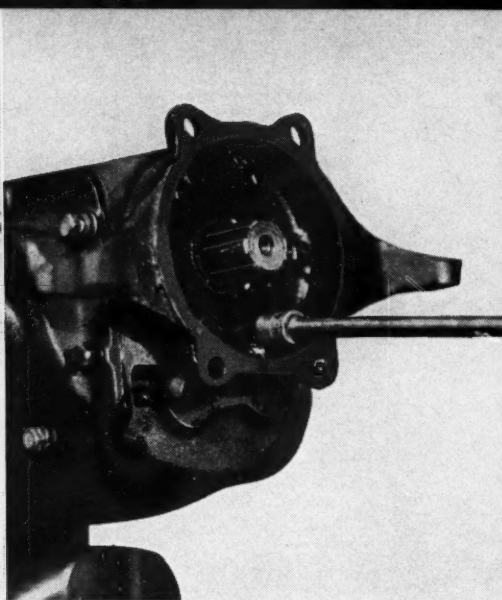
15. Wet Spots. When finish is applied over a waxed surface it often results in wet spots as illustrated. To avoid this condition be sure the surface is cleaned with special preparations designed for this purpose.

Illustrations and data through the courtesy of E. I. duPont deNemours & Co.

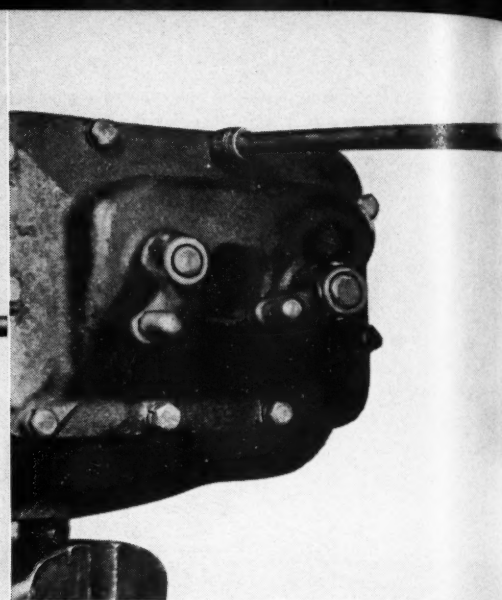




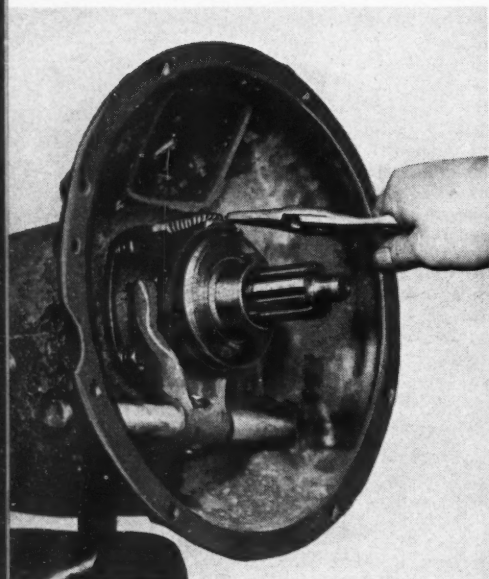
1. Remove universal joint assembly from end of transmission mainshaft.



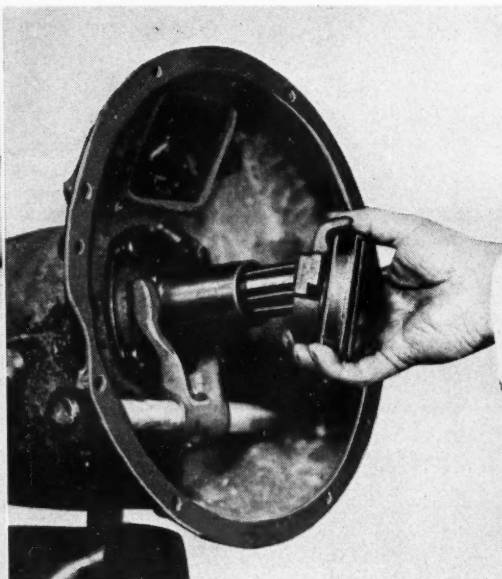
2. Remove rear mainshaft bearing retainer and engine mounting.



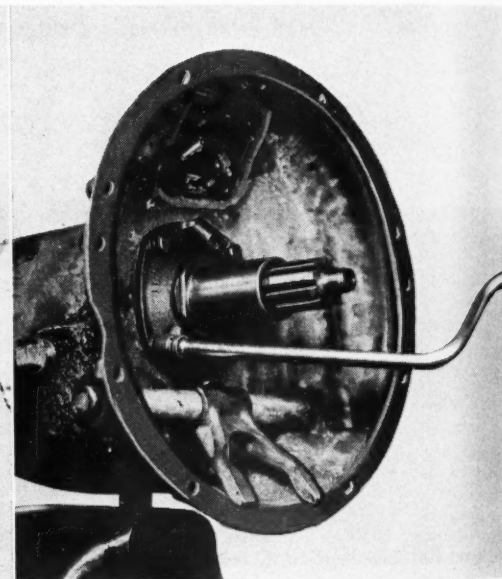
3. Remove cap screws holding transmission cover in place.



5. Unhook retractor spring from throwout bearing assembly.



6. Remove throwout bearing assembly.

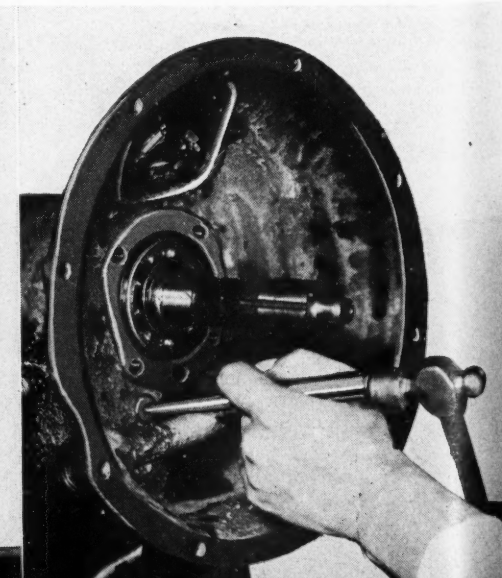
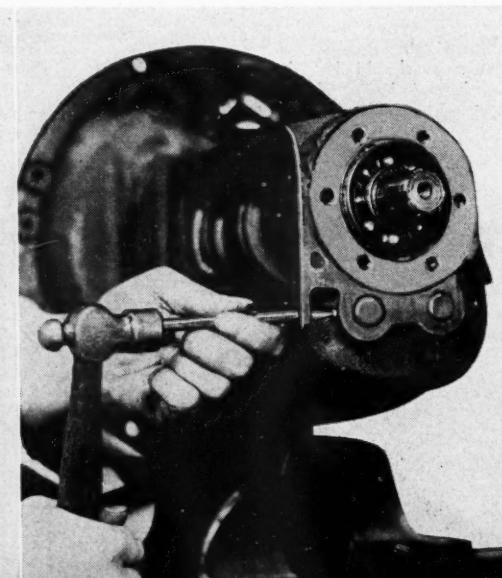
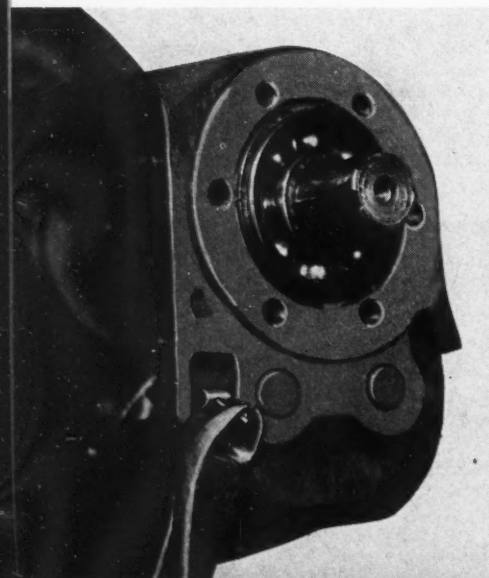


7. Remove the cap screws holding the front bearing retainer in place.

9. Remove the cotter pin from the counter-shaft and reverse idler shaft locking pin.

10. Drive out the counter-shaft and reverse idler shaft locking pin.

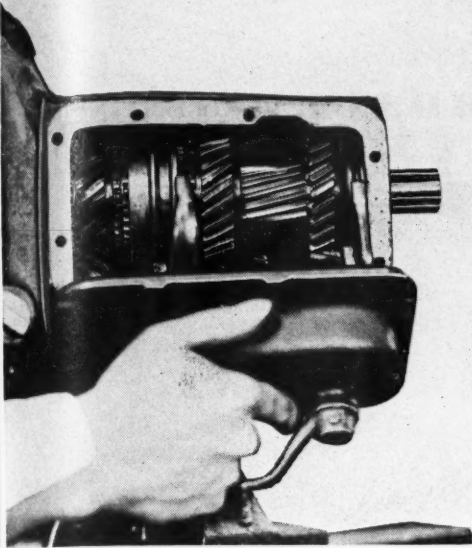
11. Drive out the counter-shaft.



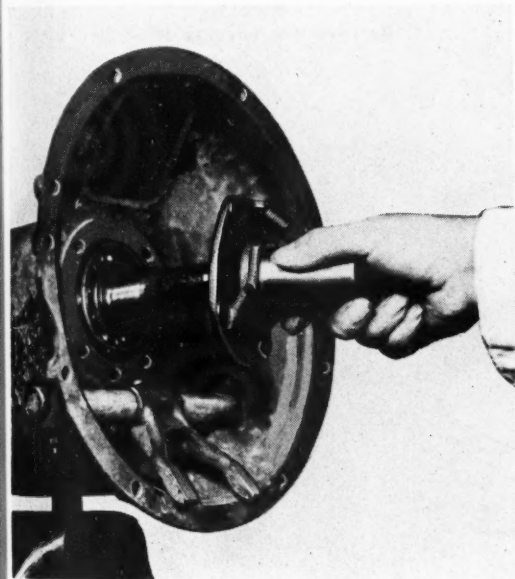
1940 FORD TRANSMISSION OVERHAUL

Here's a step-by-step picture study of disassembling the Ford Transmission unit. Follow this procedure carefully for a quick and accurate job

By BOB TURNER



4. Remove cover assembly.

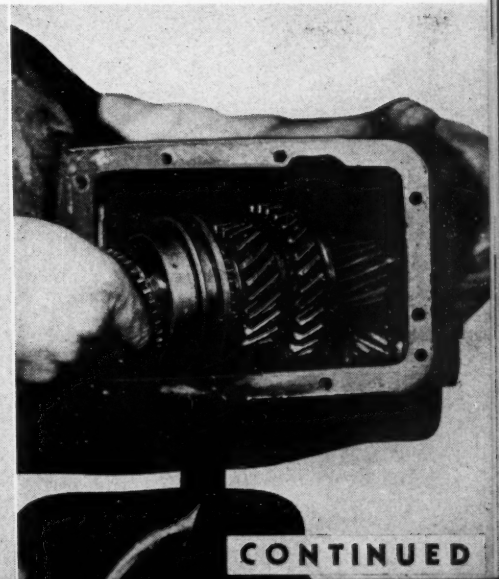
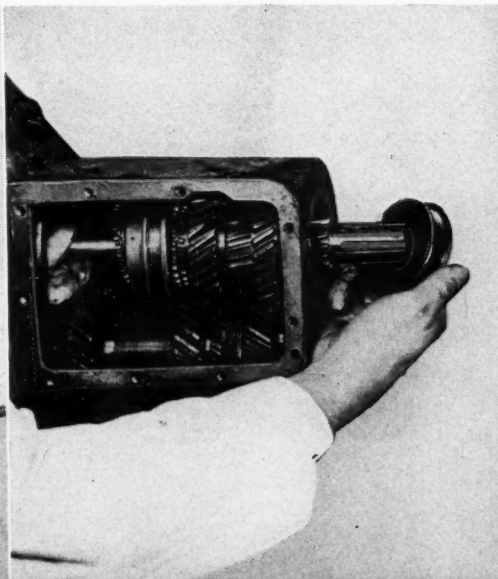


8. Remove the front bearing retainer.

12. Slide out the clutch shaft and main drive gear.

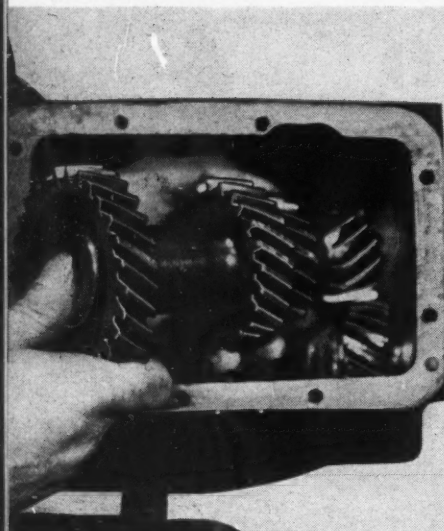
13. Remove the main shaft rear bearing.

14. Remove the mainshaft and gears.

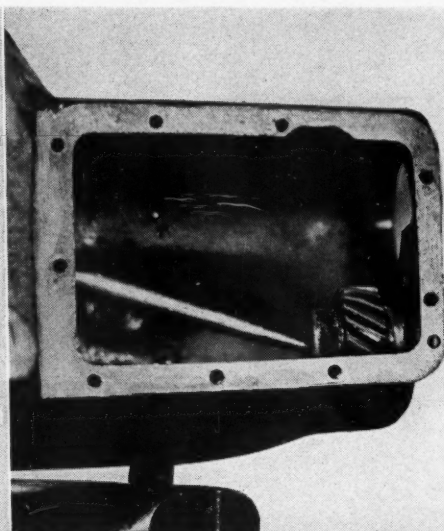


CONTINUED

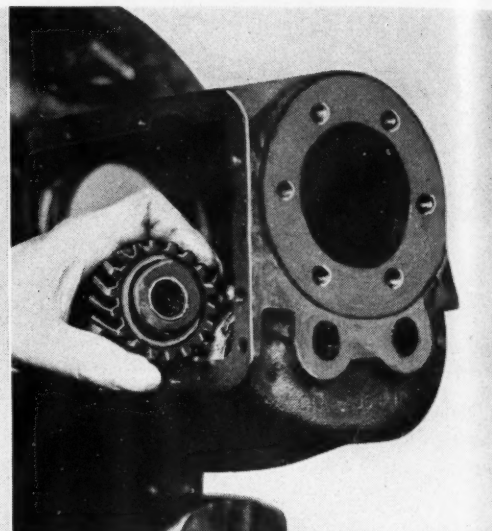
1940 FORD TRANSMISSION OVERHAUL - - CONTINUED



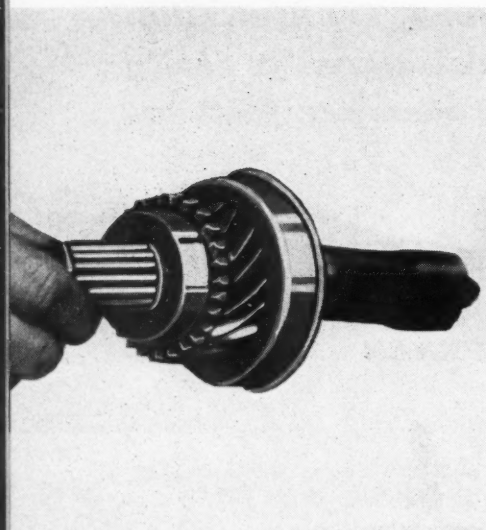
15. Remove the countershaft gear cluster and thrust washers.



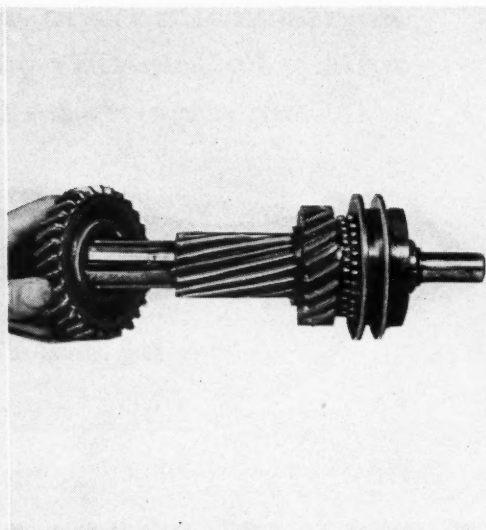
16. Drive out the reverse idler gear shaft.



17. Remove the reverse idler gear.



18. Remove the pilot bearing from the main drive gear.



19. Remove the low and reverse sliding gear from the main shaft.

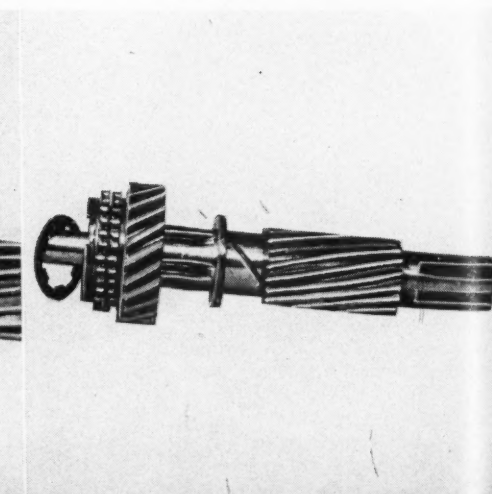
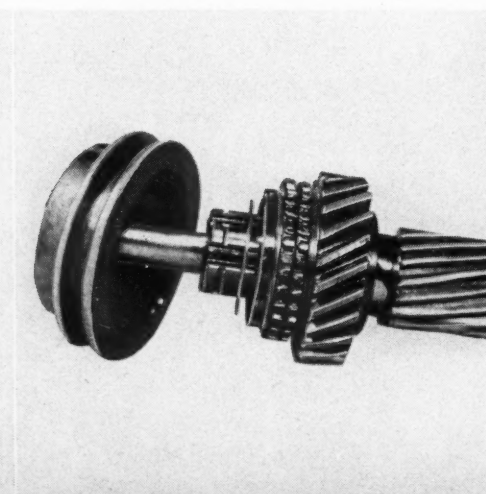
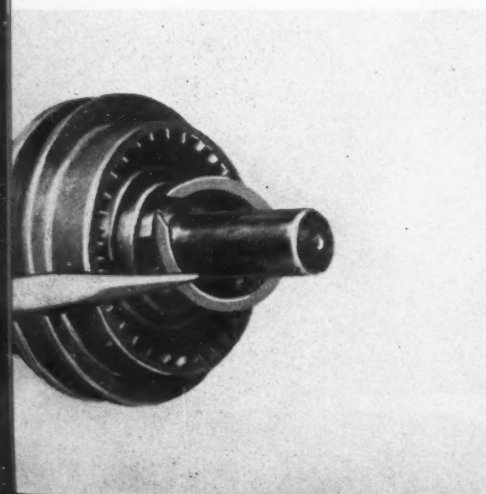


20. Remove the main shaft front bearing spacer.

21. Remove the main shaft snap ring.

22. Remove the intermediate and high clutch sleeve and hub.

23. Remove the main shaft thrust washer intermediate gear and rear thrust washer.



DON'T BLOW HEAD GASKETS

Follow this procedure when installing head gaskets:

Clean surface of cylinder block and head....Check cylinder block and head for warpage....Use good grade of gasket cement....Be careful not to nick or otherwise damage the gasket while making the installation....Tighten cylinder head nuts or cap screws in correct sequence....Use a torque wrench, pulling up each nut or cap screw to the tension specified by the engine manufacturer



Buick—65 to 70 ft. lb.



Hudson Eight—54 ft. lb.



Chevrolet—65 to 69 ft. lb.



Chrysler Eight—with plain head cap screws, 60 to 65 ft. lb.; with cupped head cap screws, 62.5 to 72.5 ft. lb.



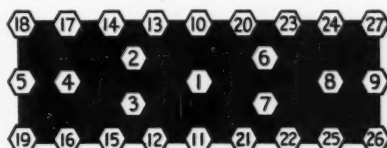
Chrysler Six, DeSoto, Dodge and Plymouth—with plain head cap screws, 60 to 65 ft. lb.; with cupped head cap screws, 62.5 to 72.5 ft. lb.



Studebaker Six — with cast iron head, 83.5 ft. lb.; with aluminum head, 66.5 ft. lb.



Oldsmobile Six—65 to 70 ft. lb.



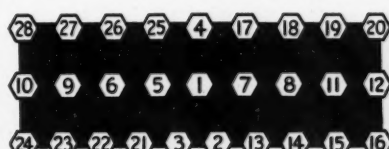
Pontiac Six—60 ft. lb.



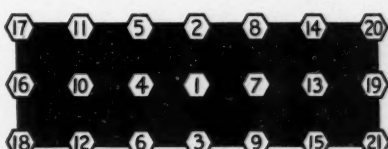
Oldsmobile Eight—65 to 70 ft. lb.



Pontiac Eight—60 ft. lb.



Studebaker Eight—with cast iron head, 83.5 ft. lb.; with aluminum head, 66.5 ft. lb.



Hudson Six—45 ft. lb.

BODY-FENDER
REPAIRS

PAINT
SHOP

BRAKES

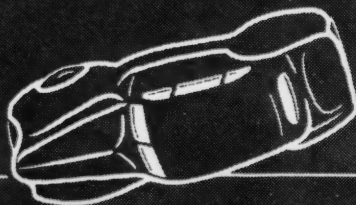
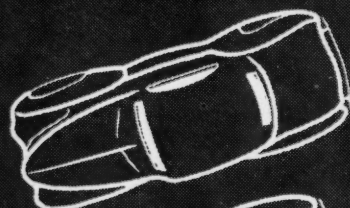
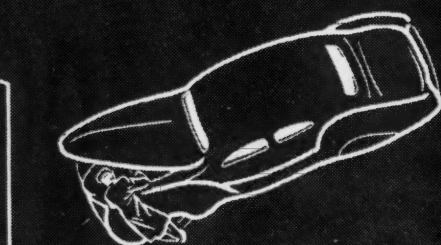
Super Service is

MAJOR OVERHAULING

ENGINE • CLUTCH • TRANSMISSION • REAR AXLE

REAR
AXLE

CLUTCH
TRANSMISSION



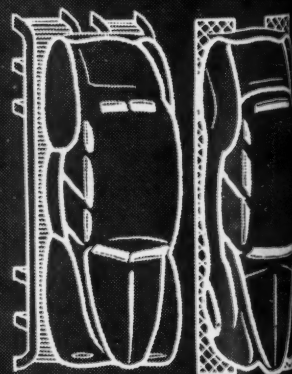
SAFETY
INSPECTION

By FRANK TIGHE

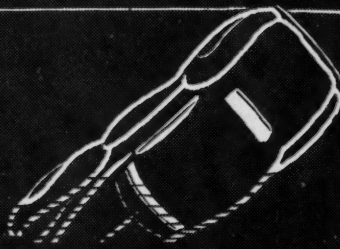
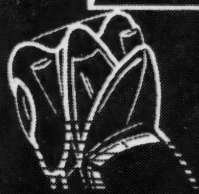
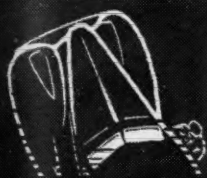
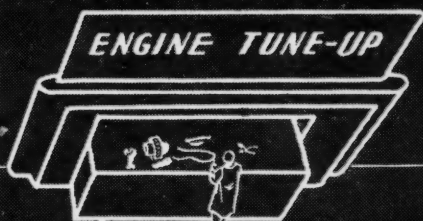
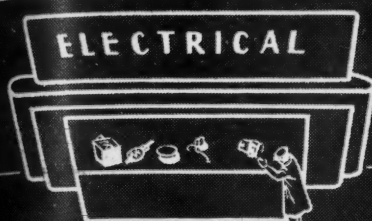
Good shopkeeping means sound management of your shop and service facilities in order to sell car owners what they want—plus what they need. That's super service!

To sell the greatest number of car owners all their automotive needs—two things are necessary: Constant, regular, day-by-day contact with the flow of automotive dollars that roll past your service station; and, complete facilities for prompt service to attract those dollars, whether they be spent for five gallons of gas or a ring job.

You've got to have a good hook to make the most of super service. Gasoline sales and quick



WHEEL ALIGNMENT
FRAME STRAIGHTENING

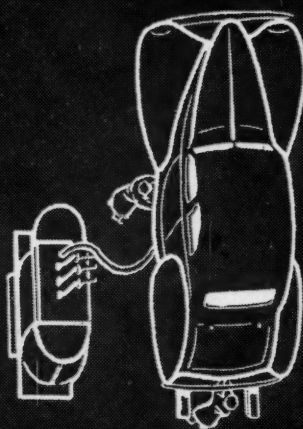


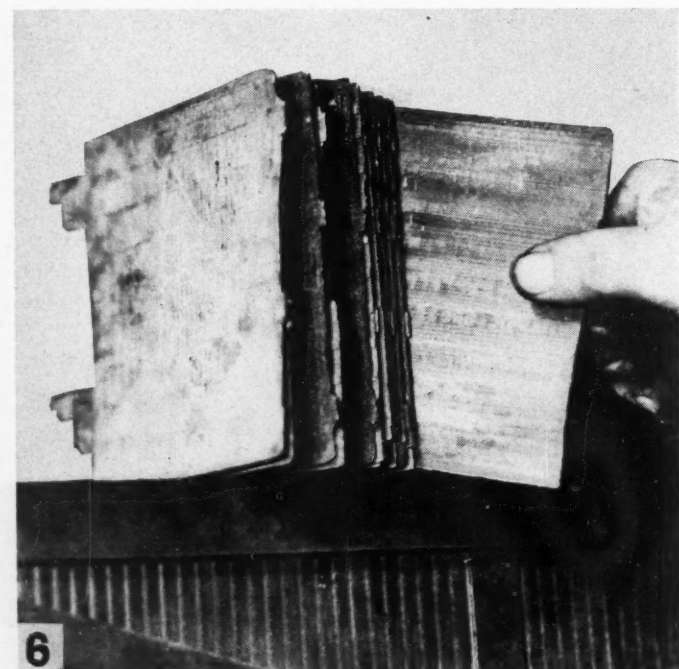
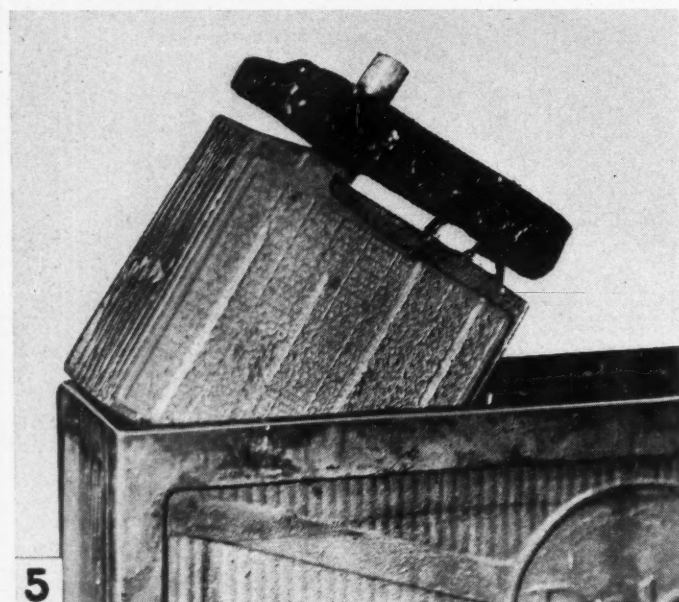
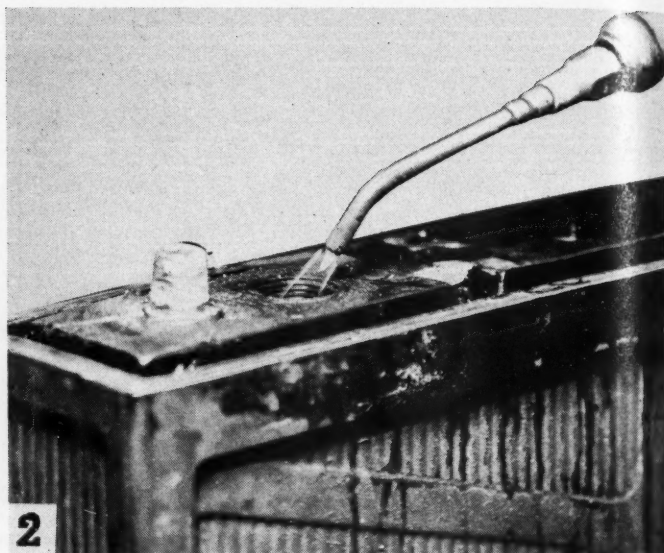
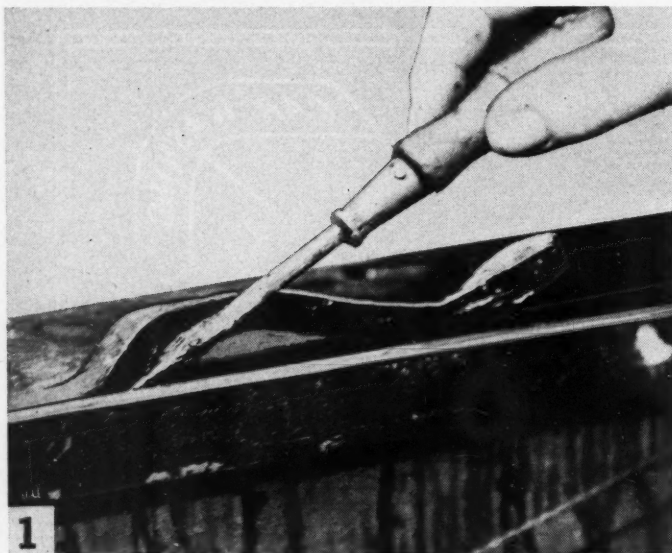
S GOOD SHOPKEEPING



services are sure-fire when it comes to establishing regular contacts with service buyers. But when you hook them, you've got to offer *something more!* You should be ready to sell them lubricants, tune-up, electrical service, brake relines, wheel alining, frame straightening, paint jobs, body and fender repairs and every important major overhaul. That's how the super service method works. That's how you can make it work for you.

Everybody's tugging at the car owner's purse-strings. You may be the best doggone mechanic in town, but unless you combine intelligent super service merchandising with the skill of your hands, the volume of business you could have will go to the man who is using super service methods.





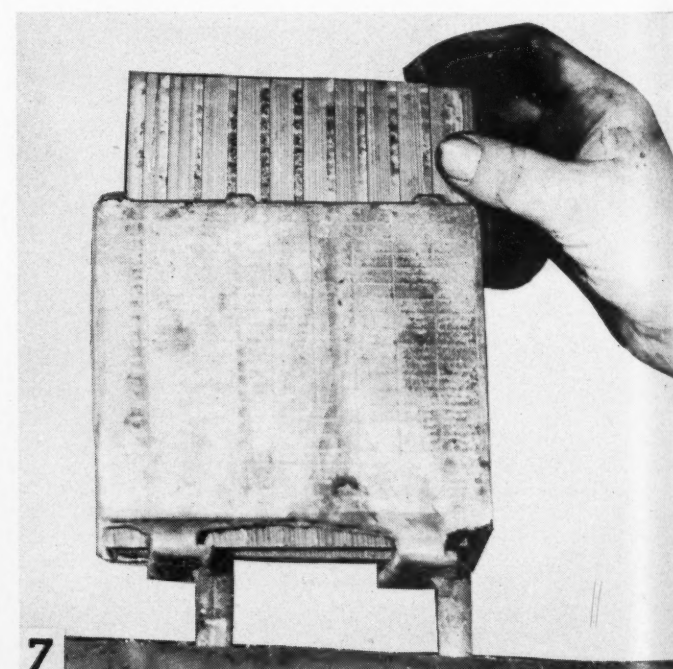
REPAIRING

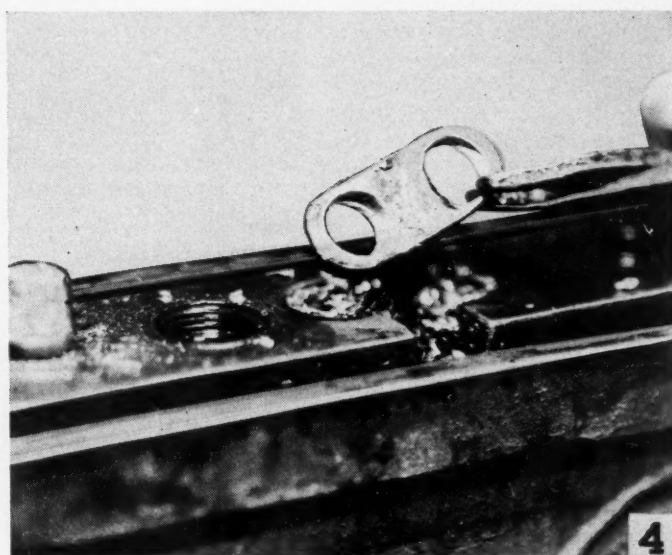
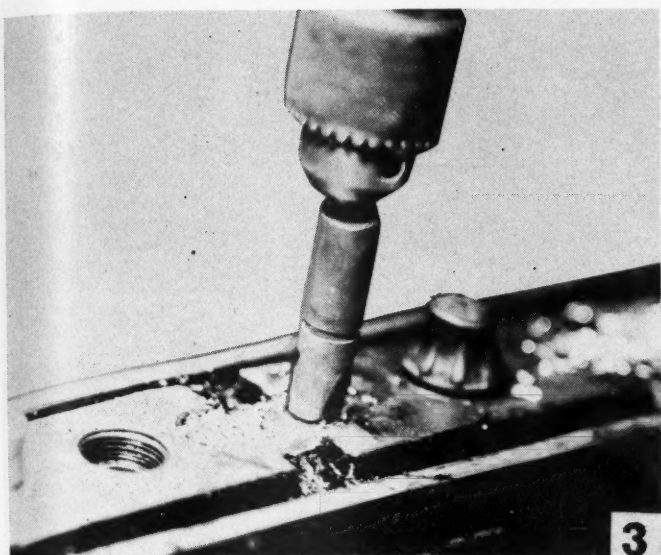
Here's the procedure for re

1. Remove sealing compound between cells and between cells and case. This compound can be melted and used over again.

2. Remove the water filler caps and touch the torch to the holes to burn off any gas that may have accumulated above the plates.

3. Drill off the lead connector plates between cells. Some repairmen burn the plates off, but drilling them off saves the post stub.





(Photos taken at Lacy L. Redd & Co., Phila.)

BATTERIES

pairing a dead cell and restoring the battery to active service

4. After drilling, the connector plate can be lifted off with pliers. Always use a new connector plate when reassembling the battery.

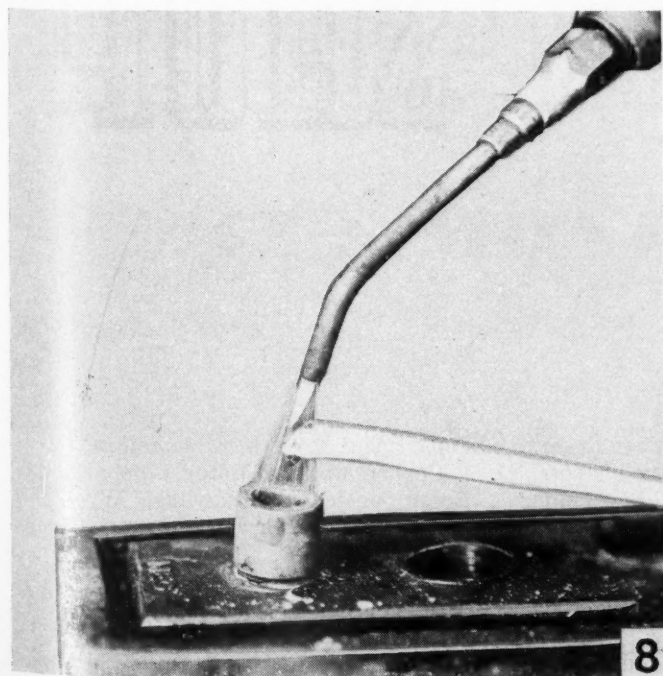
5. Remove the cell from the battery case, pulling straight up with a pair of pliers on the terminal post.

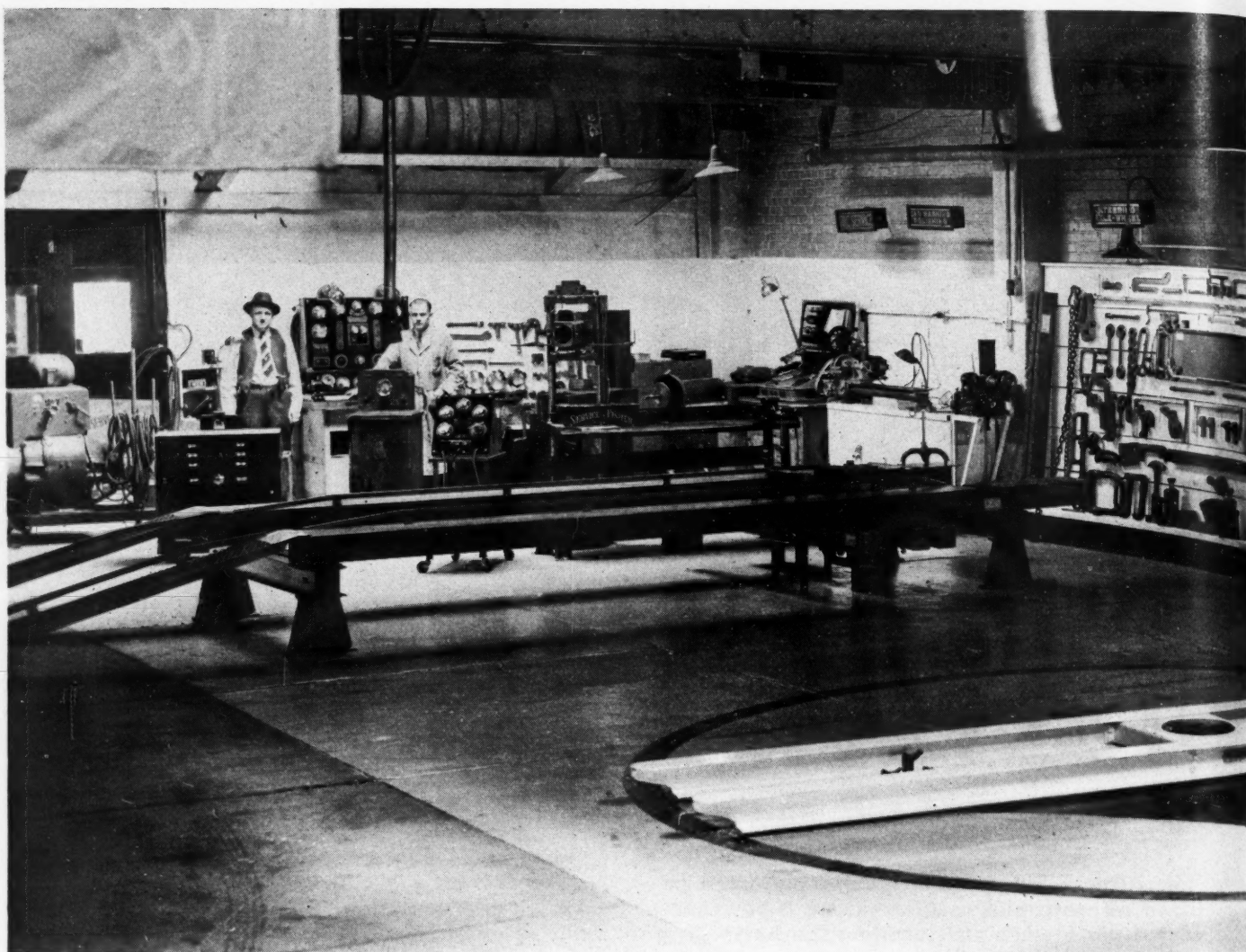
6. Remove the wood separators from between the plates. Examine the plates to be sure there is sufficient active material on them.

7. Install new wood separators between each plate, being careful to see that they do not split while being installed.

8. Reinstall the rebuilt cell and build up a new terminal post, using a steel collar and melting solder into the form.

9. Melt the sealing compound so it will pour, and reseal the cell cover to the case and to the adjacent cell cover.





***Tools and shop equipment have
double values for shop owners.
Here's how one dealer cashed
in on both values***

By JAMES R. LOWELL

SHOP

PROFITS come to the well-equipped shop! That statement has proven itself over and over again. Fundamentally, good tools and modern shop equipment pay off in two ways: they help you do more work, better work and a greater number of different types of work . . . furthermore, they help impress

your customers. They're convincers, good-will builders, skeptic-chasers.

Most automobile dealers consider themselves fortunate if their service department and shop will carry 75 per cent of the plant overhead, which is roughly the average figure for such operations. A dealer who gets 170 per cent out of the

department must *have something*.

Carbon County Motor Company, Buick dealer at Rawlins, Wyo., modernized its service department several years ago, installing perhaps the most complete and up-to-date equipment to be found in Wyoming. Last year the department receipts jumped from slightly



quacy and up-to-dateness of equipment are the salient features of the service department. Walls and floor are painted white and aluminum and are kept that way by daily cleaning. Striped awnings mark the lubrication and motor tune-up sections, and a red circle helps to further departmentalize the former section. It surrounds the hoist which is painted white.

A special panel or back also marks the lubrication section. It contains alcoves which house the grease trucks when they are not in use, has a panel in the center to hold the grease guns, and a neon illuminated clock. Across the top of the panel in black letters are the words, "SPECIALIZED LUBRICATION . . . The right lubricant—The right time—At the right place . . . Now is the time to apply that wear preventative."

Each section has a glass covered nameplate, starting at the back of the shop with the paint shop, body and fender section and wash stall. The lathes are in a screen-enclosed section. Neatly painted work benches line the wall in the overhaul and repair section. Other sections house the battery shop, steering and axle work, tire section, and on up to the front end where the lubrication and specialized services such as light and brake testing and motor analyzing are located. The more intricate and display-worthy machines used in the latter operations have been placed near the front of the department because of their value in catching the eye and dramatizing service.

(Continued on page 70)

EQUIPMENT -

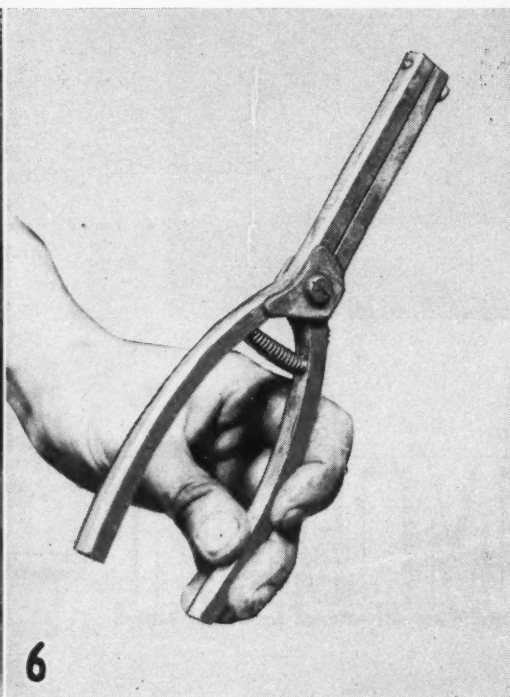
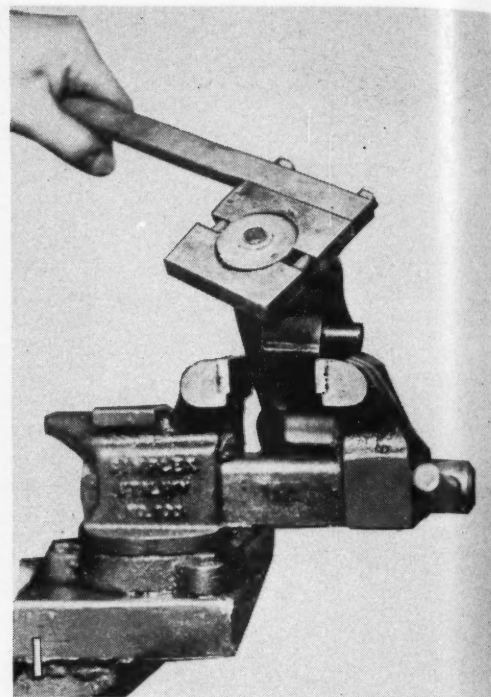
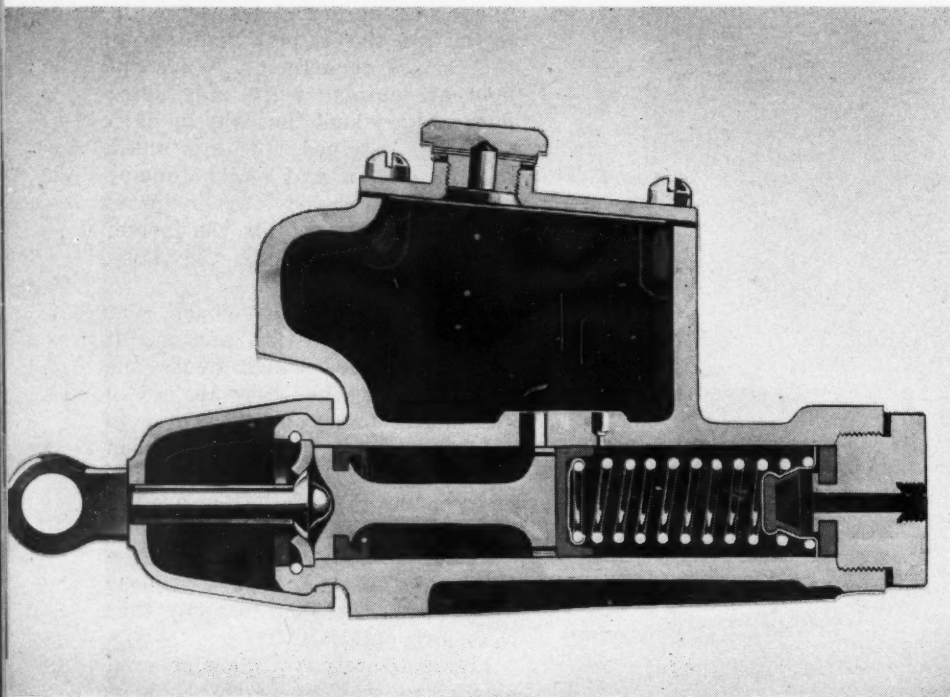
IT'S MONEY IN THE BANK

better than the average figure to 170 per cent of the entire operating expense, while in 1940 up to the start of the tourist season receipts were 101.9 per cent, giving the company second place for efficiency in such operations in the Kansas City Buick zone. Incidentally, the tourist business is considerable in Raw-

lins, a city of better than 5000 population on the main transcontinental highway (No. 30), and, moreover, overhead has been increased this year due to heavier selling and larger stocks than last year.

Neatness, cleanliness and departmentalization coupled with ade-





HYDRAULIC

BRAKE

1. Use special wrench to remove the head of the cylinder to prevent damage to the knurled nut.

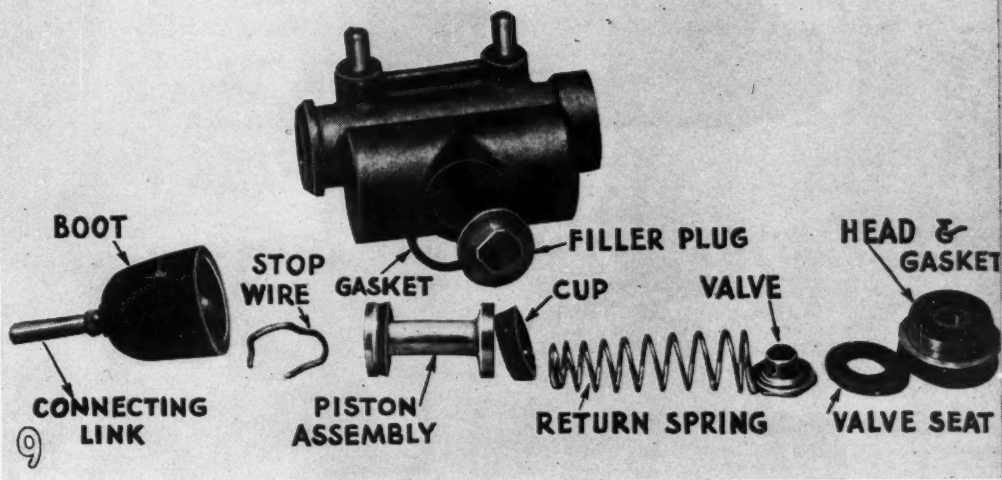
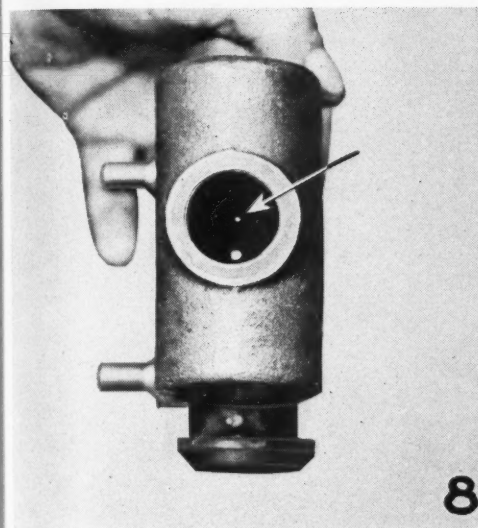
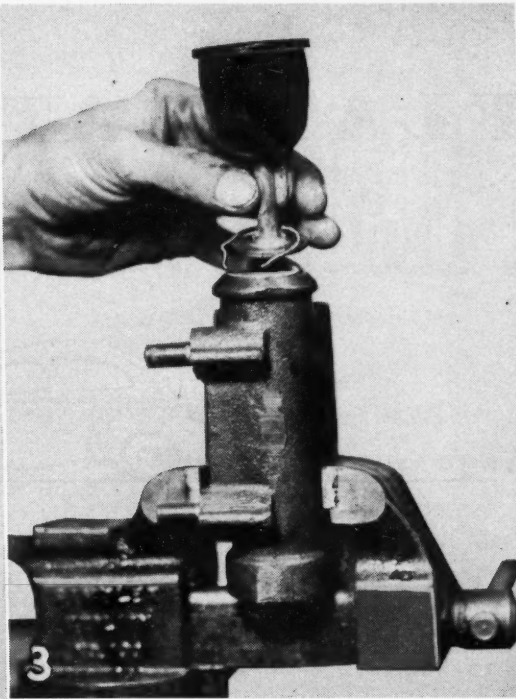
2. Remove the head and remove the rubber check valve seat which fits into the head. This valve seat should never be used over again — always replace it with a new seat. Re-

move the check valve and piston return spring.

3. Loosen the rubber boot from the master cylinder and turn the boot inside out on the connecting link. Remove the piston stop wire lock ring, and lift out the connecting link, lock ring and piston stop washer. Push out the piston and primary cup.

4. Check the cylinder with FL-114 No-Go gage to determine if the cylinder has been honed before and is now too large to permit another honing. If the gage enters the cylinder it indicates that the cylinder is too large and should be replaced.

5. Honing should be carefully done, taking out only enough



By **BOB HANKINSON**

MASTER CYLINDER SERVICE

stock to smooth up the cylinder walls.

6 & 7. Sharp edges left on the by-pass port by honing should be burred off, otherwise they are apt to cut a groove in the piston cup. Special burring pliers are used, having a sharp dowel slightly larger than the port. These pliers are inserted in the

cylinder and the dowel located in the by-pass port. A slight pressure is enough to burr off the sharp edges.

8. Check the size of the by-pass port, using a wire gage. The "go" gage is .117 in., and the "no-go" gage is .126 in. If the by-pass port is larger than the "no-go" gage, the cylinder

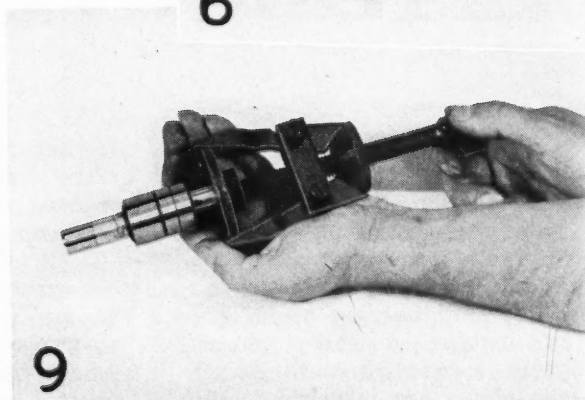
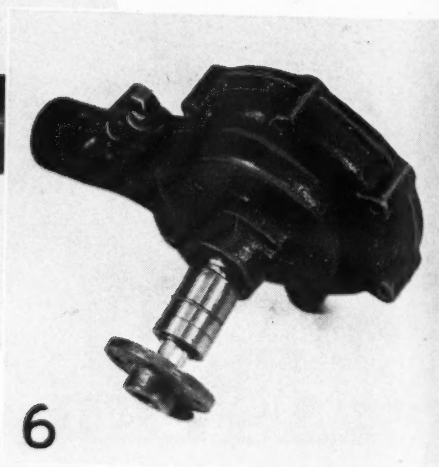
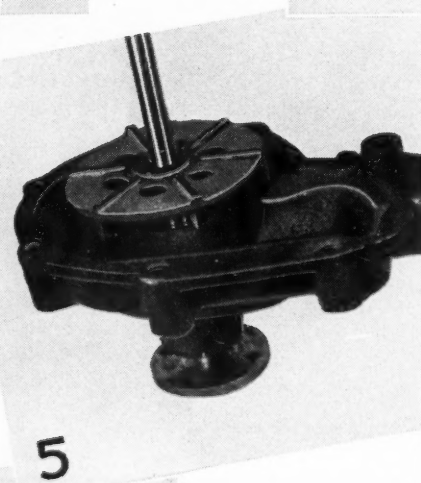
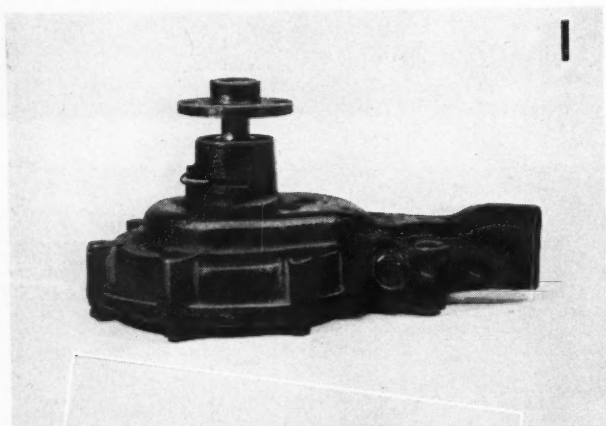
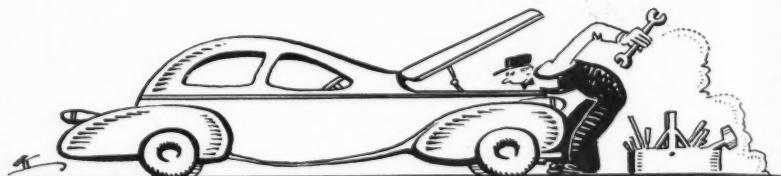
should be replaced.

9. Wash the cylinder and all parts in alcohol. When reassembling, use new check valve seat, new piston primary and secondary cups, and new check valve. All parts should be dipped in Wagner Lockheed brake fluid before reassembling. To prevent damage to rubber cups,



FLAT RATE

SERVICE ON



PACKLESS

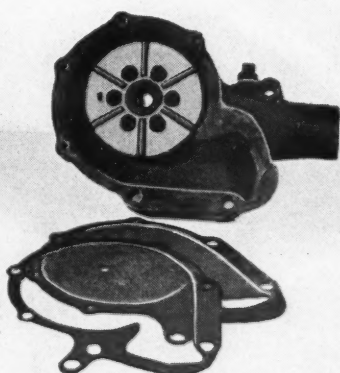
WATER PUMPS



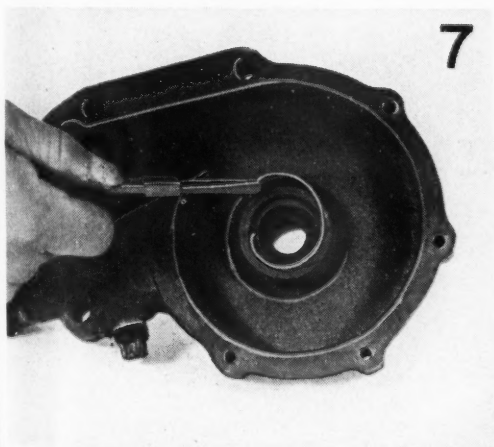
Repacking the water pump is a lost art—the modern pump requires disassembly and replacement of worn parts. Here's how

By JIM ROBERTS

3



7

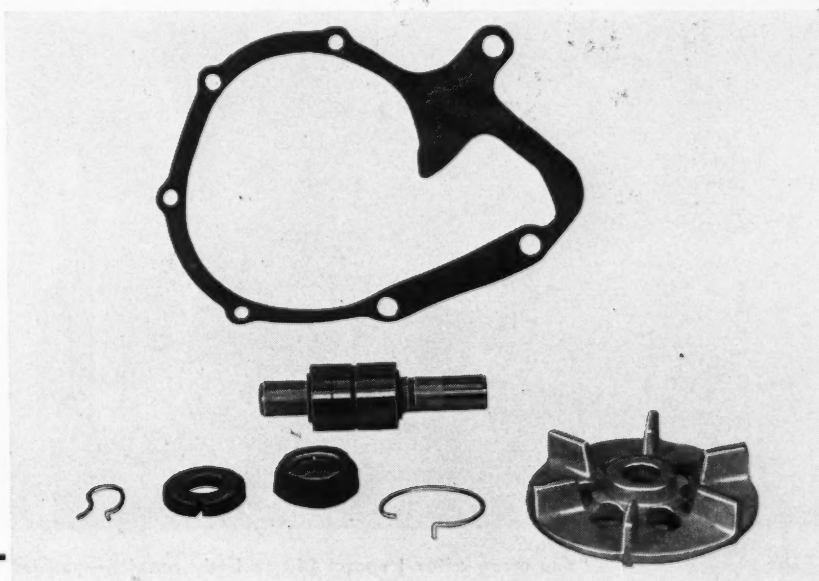


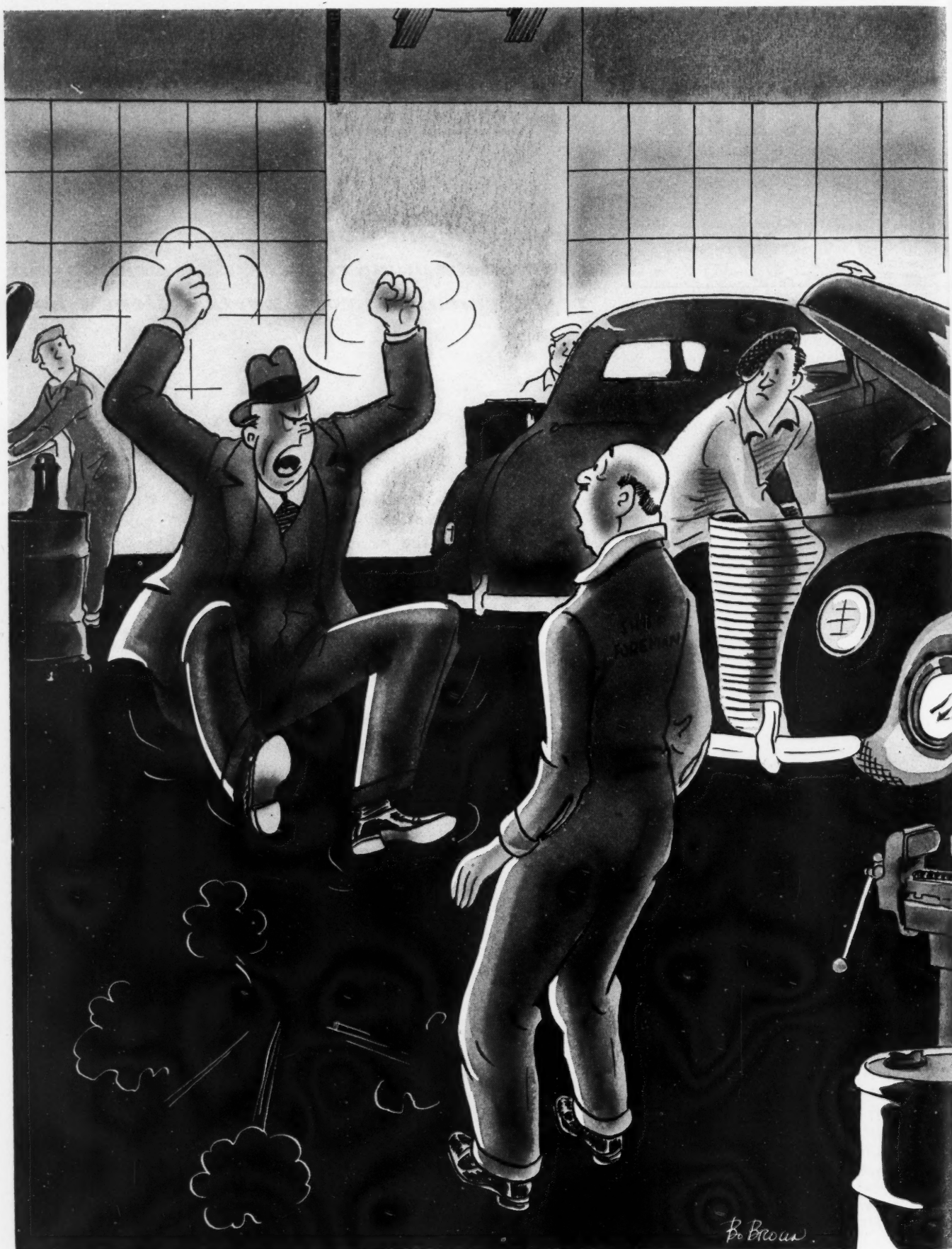
Parts Needed

Parts necessary to overhaul pump consist of:

- Body gasket
- Shaft and bearing assembly
- Bearing retainer snap ring
- Graphite washer and neoprene grommet
- Water pump seal retainer snap ring
- Impeller

1. 1937-38-39 Oldsmobile water pump. Construction is practically identical with 1940 model.
2. Remove the cap screws holding the cover plate to pump body.
3. Remove the cover plate and gasket.
4. Remove the bearing retainer lock ring.
5. Press the shaft and bearing assembly out of the impeller.
6. The pulley flange and shaft and bearing are removed as a unit.
7. Remove the water pump seal retainer snap ring.
8. Remove the graphite washer and neoprene grommet.
9. Remove the pulley flange from the shaft and bearing assembly.





"You mean after I spend \$50 on body repairs—you let my wife take the car?"

GANGWAY! FOR NATIONAL DEFENSE



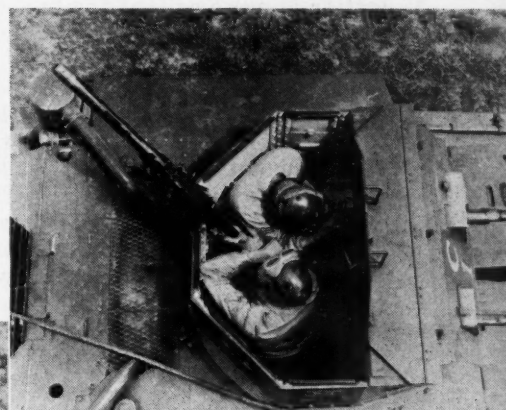
Globe Photo

Uncle Sam needs mechanized forces equal to that of any world power, military experts say. Here's the seventh cavalry brigade showing the vital part that motive power plays in military movements. A dozen divisions like these are needed.

Looking directly down into a tank (right) as the commander mans the .30-caliber anti-aircraft gun. Assistant gunner aims the .50-caliber gun. Two .30-caliber guns are behind the commander.



They call them Hell Buggies (left) and space is limited. Four troopers ride in the tank cab. Above the driver's head is a .50-caliber gun and to the right, a .30-caliber.



If necessary, the 81-millimeter mortar can be fired from its carrier as is being done at right. The gun's range is 2200 yards.



The command car of a reconnaissance troop (right). Here the captain receives a message by a runner while the operator of the two-way radio jots down another.



Half-track (part tractor) trucks take the new 75 across rugged terrain that would be too much for horse-drawn artillery (left).



Smash through or go over is the tank driver's motto. Here (left) the tank hits a low, thick concrete rampart, with motors roaring and steel-blocked tracks clattering.

Closest approach to the cavalymen of the sweat-and-leather days is the motor cycle rider. His two-wheeled mount has to take him bouncing across fields on scouting missions (below).



What a condenser is, and how it operates in the ignition circuit, is clearly explained and illustrated in this informative article

TO fully understand the ignition condenser and the part it plays in ignition it is necessary first of all to get the proper relationship of the condenser to the coil and ignition system as a whole.

Let's begin with the ignition distributor, Fig. 1, a cam of this distributor or any distributor for that matter is made so that the breaker points are closed during a certain number of degrees of rotation in order that the ignition coil has enough time to "build up" or become energized. The time that the breaker points are closed is called "dwell" or cam angle, Fig. 1. The cam is also designed so that breaker points are opened at a given speed in relation to the cam travel. (Ordinarily this is about .002 inch per degree of cam travel.) This is done to get the proper breaker point and condenser action.

If the breaker points are set at the correct cam angle the points will be open at the proper speed to give the condenser action needed for proper coil performance. If the cam angle is less than specified the action of the breaker points is too slow and burning of the points results. On the other hand should the cam angle be too long (point opening too small) the point action is too fast and results in poor coil action and burned points. In other words, the points are opened with a hammer-like effect and closed in the same way, causing the points to bounce with resultant erratic coil action. In addition if the cam angle is too long and the coil does not have a chance to discharge, a high voltage may be flowing in the coil at the time the breaker points close. This is due to the following reasons:

When the breaker points open the primary current voltage drops to zero. The magnetic field in collapsing generates high voltage in the primary of approximately 150 to 200 volts. Obviously this is much higher than the normal 6-volts of

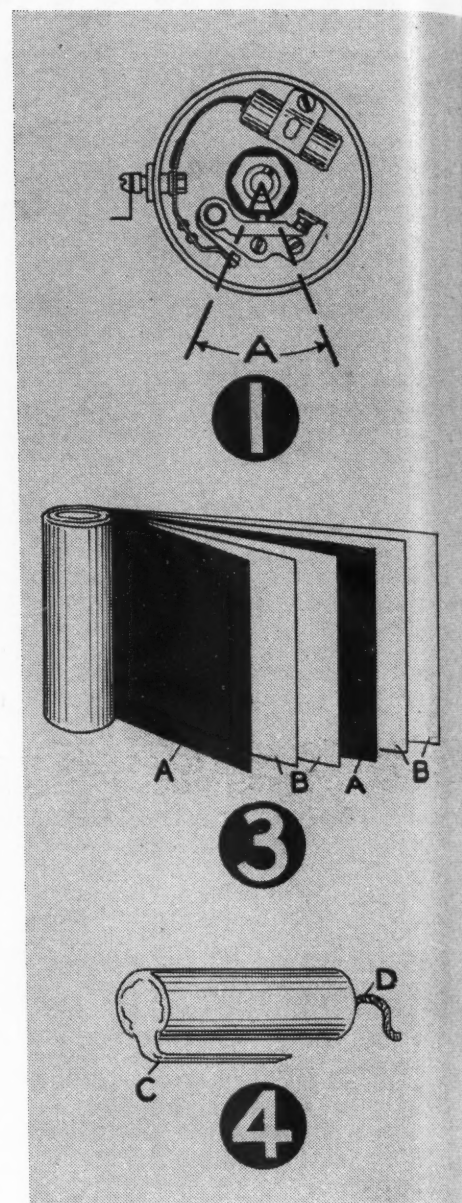
the battery. The condenser is charged by this high voltage and unless the breaker points open fast enough the high voltage jumps across the points, setting up an arc which not only damages the points by burning but makes impossible the rapid collapse of the magnetic field which results in a weak spark. That is why the correct cam angle or dwell is necessary for proper operation of the distributor and the ignition system as a whole.

If the breaker points are operating normally the coil and condenser always are completely discharged before the points again close. But if the points are bouncing the coil discharges into the condenser. Since the points immediately close again they permit the condenser to discharge through the points. This condenser discharge is many times greater than the normal current draw of the coil and may actually weld the points together.

From this it will be evident that a condenser of too small or too large capacity or one which is not in proper condition prevents the ignition coil from operating efficiently. Therefore, the best coil in the world is practically helpless if the condenser is not up to par or of proper capacity. When the service man installs a new coil he should by all means check the old condenser or install a new one with the coil to make sure that the coil will perform as the maker intended.

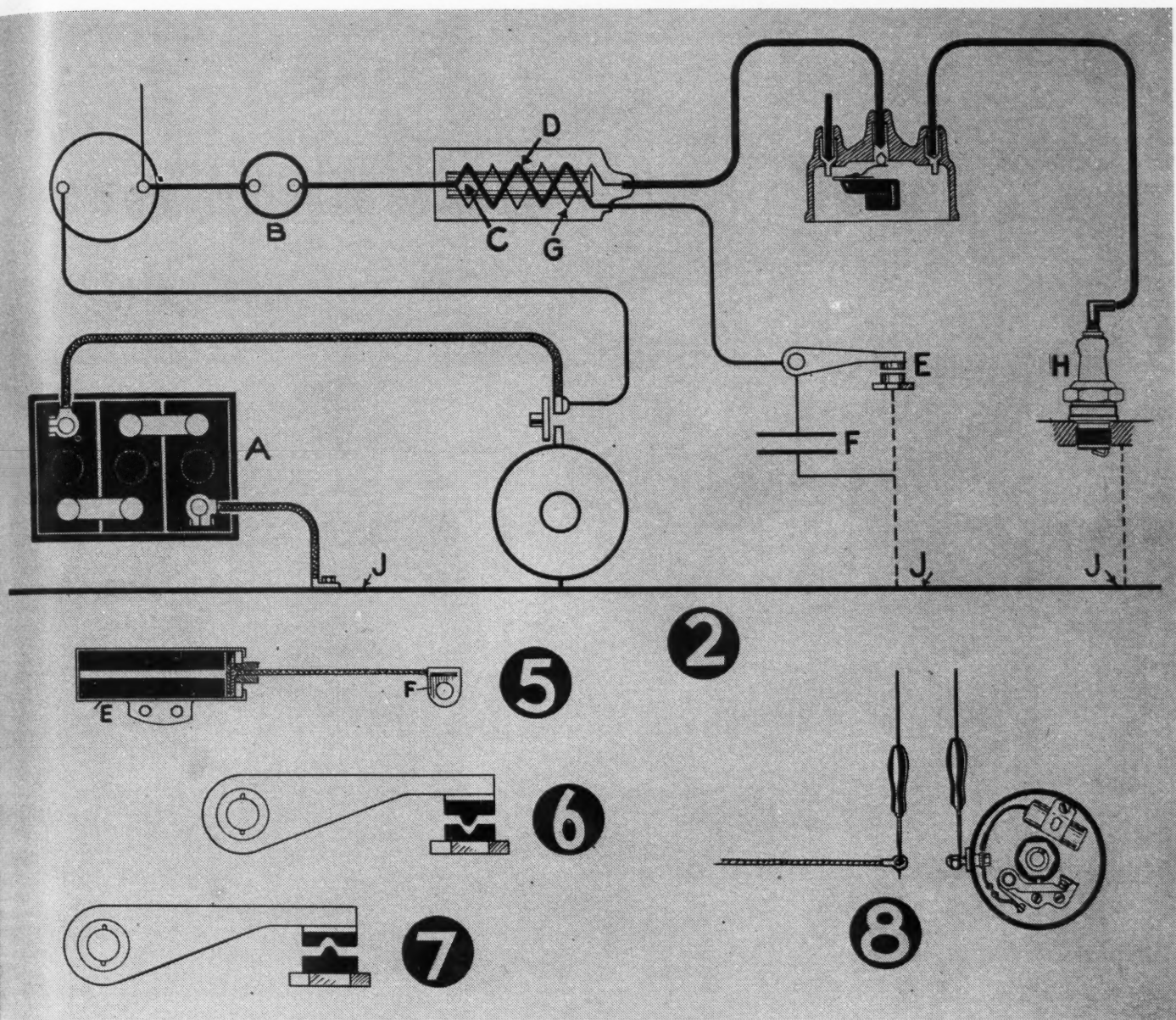
Referring to Fig. 2, it will be seen that the condenser is connected in parallel or across the breaker points. The diagram shows a typical battery ignition circuit and it might be said in general that all such circuits are essentially the same. A, is the battery; B, the switch; C, core of coil; D, primary coil winding; E, breaker points; F, condenser; G, secondary of coil; H, spark plug. A common ground J, is used for the battery, breaker points and the spark plug. The

(Continued on page 115)



1. Dwell, or cam angle, indicated by "A". 2. A typical battery ignition circuit; "A" battery, "B" switch, "C" core of coil, "D" primary coil winding, "E" breaker points, "F" condenser, "G" secondary of coil, "H" spark plug, "J" ground. 3. Showing the construction of a condenser. 4. Showing the construction of a coil.

CHECK



tion of a condenser. One strip of foil "A" is connected to the terminal "C" in Fig. 4, and the other foil is connected to the terminal "D", in Fig. 4. 5. The completed condenser, consisting of the assembly shown in Fig. 4 mounted in a shell. The shell "E" then forms

the ground connection, and "F" the terminal which attaches to the breaker arm. 6. Effect on points of an under-capacity condenser, assuming the movable arm to be positively grounded. The crater or small depression is on the negative contact point. 7. Effect on

points of an over-capacity condenser, assuming the movable arm to be positively grounded. In this case the crater forms on the positively grounded contact. 8. Testing a condenser with a voltmeter, switch on, and points blocked open by a fibre washer.

CONDENSERS FOR GOOD

TUNE-UP

TAKING THE "SHOCK" OUT



Static electricity developed by tire friction builds up in the car and gives a "shock" to anyone touching the car or passengers. While harmless, this condition is annoying. Here are some pointers on how to eliminate this static build-up

1. Dismount all tires and tubes, removing the tubes from the tires. Thoroughly clean the tubes with naphtha or gasoline, removing all dirt and soapstone.

2. Clean the inside of each tire with naphtha or gasoline, being sure that all dirt and soapstone is removed. Examine the tire for breaks in the cord.

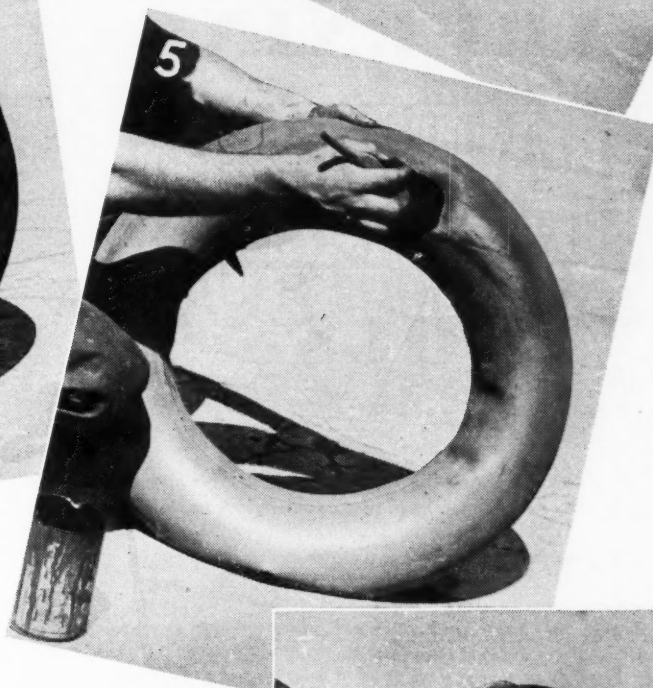
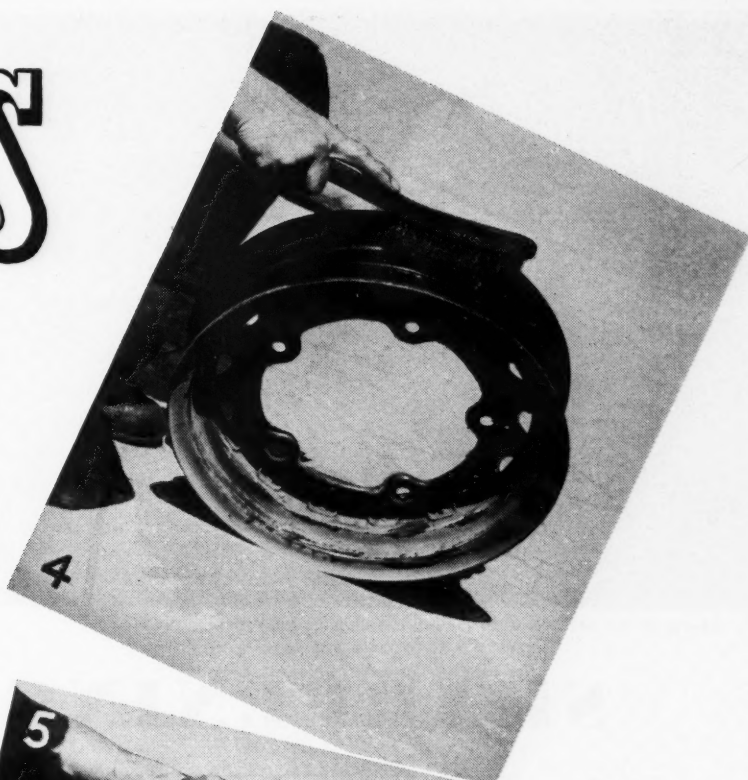
3. Clean one sidewall of each tire, being sure to clean the

bead of the tire where it contacts the rim; and the sidewall from the bead to the edge of the tread.

4. Clean the inside of the wheel rim with a wire brush and gasoline, removing all dirt, rust and paint. Be sure to clean the rim flange where it contacts the tire.

5. Paint the entire tube surface with a paint mixed up from the following ingredients: 1 pt. naphtha, 7 oz. powdered graphite, 1 1/2 oz. cold patching cement.

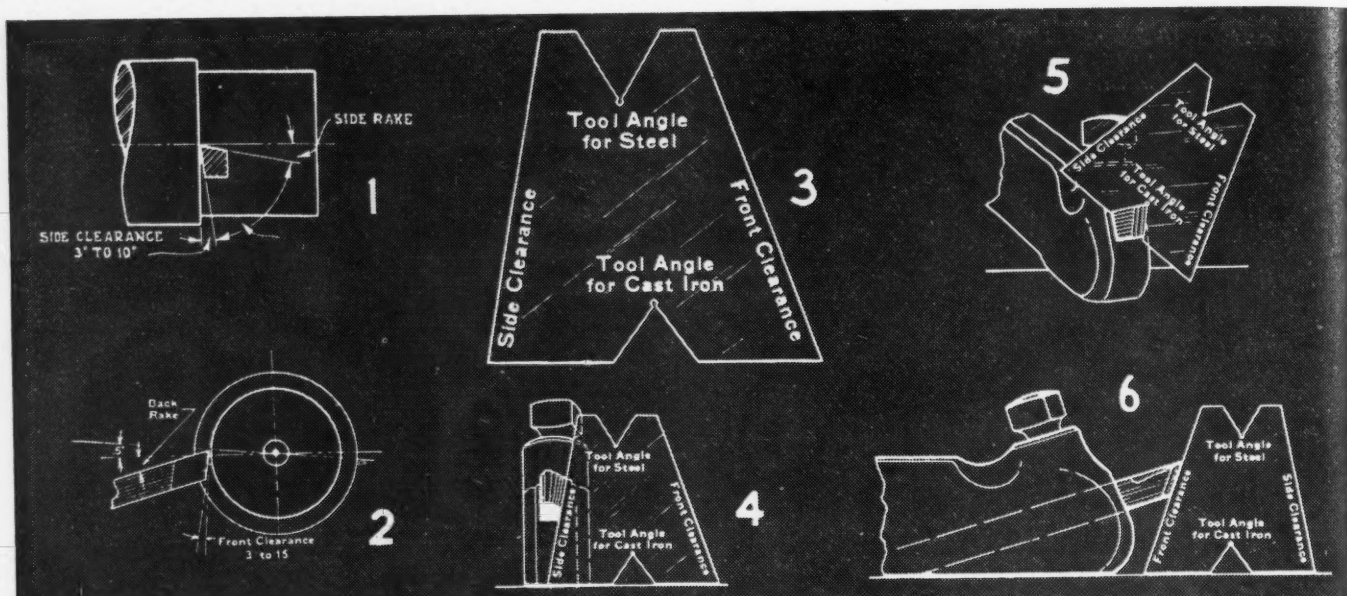
OF TIRES



By DON RAY

6. Paint the sidewall of each tire with the same paint, being sure to paint the surface of the bead as well as the complete sidewall up to the edge of the tread.

Remount the tires and tubes, and mount the wheel on the car with the painted side of the tire toward the car. Also when mounting the wheels on the car, switch the tires from their former position: install right front on left rear and left front on right rear. This will change the direction of rotation of the tires from their original mounting.



Illustrations and data through the courtesy of South Bend Lathe Works

SHARPENING LATHE TOOLS

There are a lot of angles in sharpening a lathe tool and they all have to be right to make a smooth cut



IN order that the cutter bit or lathe tool may cut freely it must be ground with the correct side clearance, front clearance, side rake and back rake. These angles are shown in the illustrations.

Side clearance is ground on the side of the cutter bit to permit the cutting edge to advance freely without having the heel of the tool rubbing against the work. Fig. 1. The amount of side clearance varies from 3 degrees to 10 degrees depending on the amount of feed used and the nature of the work.

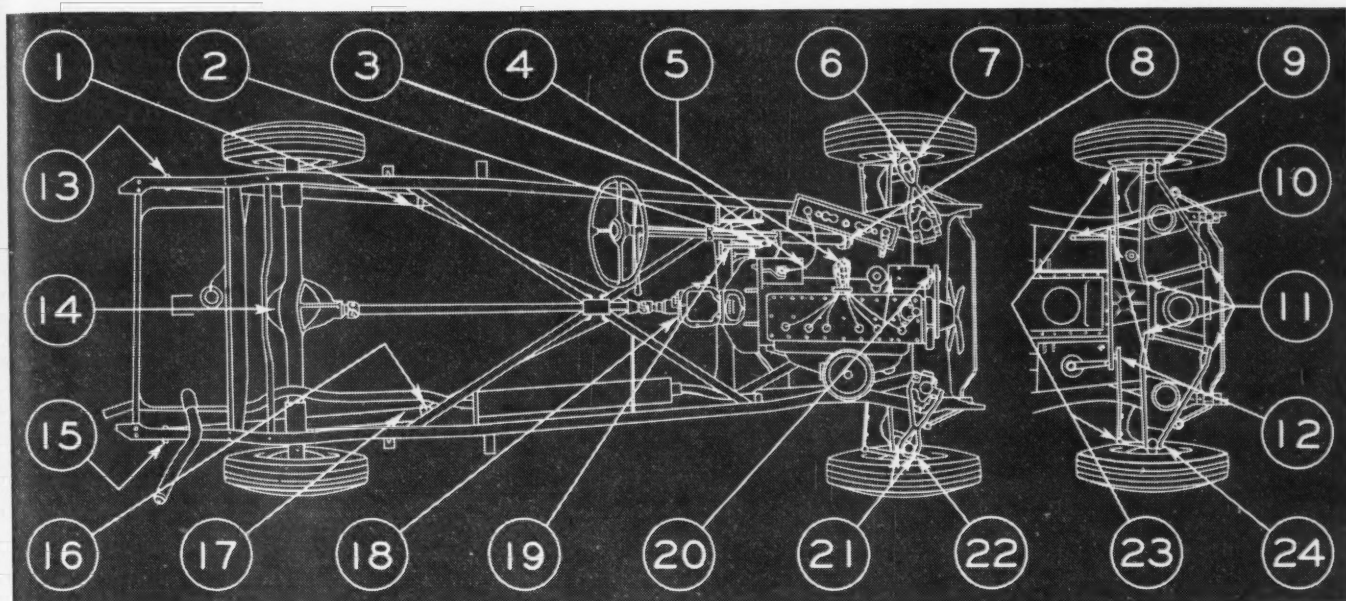
Front clearance is ground on the end of the cutter bit to permit the cutting edge to cut freely as it is fed to the work. Fig. 2. The amount of front clearance varies from 3 degrees to 15 degrees depending on the nature of the work and the height of the cutter bit.

Back rake is cut on the top of the cutter bit as shown in Fig. 2, so as to facilitate free cutting.

Side rake as shown in Fig. 1 is ground on the top of the cutter bit to improve the cutting qualities.

Tool angle is the included angle of the cutting edge which is formed by the top and side of the cutter bit as shown in Fig. 1. When turning soft steel the tool angle should be about 61 degrees. For hard steel and cast iron the tool angle should be 71 degrees. For chilled cast iron the tool angle may be as great as 85 degrees.

When grinding a tool or checking the angles a gage or templet can easily be made from heavy gage sheet iron. Fig. 3 illustrates such a gage and is drawn to scale so that it can be used as a template or pattern when making a gage.



1. Spring Bushing—Chassis Lubricant
2. Brake Master Cylinder—Brake Fluid
3. Starting Motor—Light Engine Oil
4. Distributor Cam—Petroleum Jelly
5. Distributor Shaft—Cup Grease
6. Upper Control Arm Pin—Chassis Lubricant
7. King Pin—Chassis Lubricant
8. Steering Gear—Steering Gear Lubricant
9. Lower Control Arm Pin—Chassis Lubricant
10. Steering Idler Arm—Chassis Lubricant
11. Lower Control Arm Shaft—Chassis Lubricant
12. Steering Drag Link—Chassis Lubricant
13. Spring Shackle—Chassis Lubricant
14. Differential—Hypoid Gear Lubricant
15. Spring Shackle—Chassis Lubricant
16. Spring Bushing—Chassis Lubricant
17. Spring Covers—Graphite Lubricant
18. Transmission—Transmission Oil
19. Clutch & Brake Pedal—Chassis Lubricant
20. Generator—Light Engine Oil
21. Upper Control Arm Pin—Chassis Lubricant
22. King Pin—Chassis Lubricant
23. Steering Tie Rod—Chassis Lubricant
24. Lower Control Arm Pin—Chassis Lubricant

WHAT LUBRICANT WHERE?

The "grease monkey" has graduated, and the manager of the modern car lubrication department has to know his lubricants if he is to get the right kind in the right place at the right time.

LUBRICATING the modern automobile is an art, and is far more important to the present-day shop than it used to be. Time was when the man on the grease rack was considered a "grease monkey," and it was felt that almost any fellow picked up on the street was good enough to "grease" a car.

The picture has entirely changed in the past few years, and today the manager of the lubrication department is carefully trained not

only in the various parts of the car that need lubricating, but more particularly in the type of lubricant needed for that particular part.

The petroleum industry has developed a number of specialized lubricants, each designed to meet specific requirements of load, speed, heat and other conditions present in a particular unit of the car. Car manufacturers have designed the units of the car with the thought

(Continued on page 82)

FRONT

WHEEL ALIGNMENT

MAKE AND MODEL		FRONT AXLE			
		Caster (Degrees)	Camber (Degrees)	Toe-in (Inches)	Kingpin Inclination (Degrees)
Auburn 654	1936	3 1/2-4	1 1/2	1/8	7 1/2
Auburn 852 & SC-852	1936	2-3	1 1/2	1/8	7 1/2
Bantam 60	1938	11	1 1/2	1/8-1/4	0
Bantam 60	1939	11	1 1/2	1/8-1/8	1 1/2
Bantam 65	1940	15	1 1/2	1/8-1/8	1 1/2
Buick 34-40, 35-40	1934-35	2 1/4-3 1/4 E	0-3/4	0-1/8	4 1/2 (b)
Buick 34-50, 35-50	1934-35	1 1/4-2 1/4 E	0-3/4	0-1/8	5 1/2 (b)
Buick 34-60, 35-60	1934-35	1-1 1/4 E	0-3/4	0-1/8	5 1/2 (b)
Buick 34-90, 35-90	1934-35	1-1 1/4 E	0-3/4	0-1/8	5 1/2 (b)
Buick 36-40	1936	3-3 1/2	1/4 N-3/4 P	1/8-1/8	3 1/2-4 1/2
Buick 60, 80	1936	1 1/4-2 1/4	1/4 N-3/4 P	1/8-1/8	4 1/2-5 1/4
Buick 36-90	1936	3 1/4-1 1/4	0-1 1/4 P	1/8-1/8	4-5
Buick 37-40	1937	1 1/4 N-3/4 P	1/4 N-1 P	0-1/8	3 1/2-4 1/2
Buick 60, 80, 90	1937	1 1/4 N-3/4 P	1/4 N-1 P	0-1/8	3 1/2-4 1/2
Buick 40	1938-39	1 1/4 N-3/4 P	1/4 N-1 P	0-1/8	3 1/2-4 1/2
Buick 60, 80, 90	1938-39	1 1/4 N-3/4 P	1/4 N-1 P	0-1/8	F
Buick 40, 50	1940	3/8-3/8	-1/4 +1	0-1/8	3 1/2-4 1/2
Buick 60, 70	1940	3/8-3/8	-1/4 +1	0-1/8	3 1/2-4 1/2
Buick 80, 90	1940	0-3/8	-1/4 +1	0-1/8	4-5
Cadillac V8-60	1936	1 1/2-2	1/4-1	0-1/8	4° 51'
Cadillac V8-70 & 75	1936	3/4-1 1/4	0-1/2	0-1/8	5° 38'
Cadillac V12-80 & 85	1936	3/4-1 1/4	0-1/2	0-1/8	5° 38'
Cadillac V16-90	1936	1 1/2	1	1/8-1/8	4
Cadillac V8-60	1937	1 1/4-1	1/4-1	1/8-1/8	4° 51'
Cadillac V8-65, 70, 75	1937	0-1/4	0-1/2	1/8-1/8	5° 38'
Cadillac V12-85	1937	0-1/4	0-1/2	0-1/8	5° 38'
Cadillac V16-90	1937	0-1/4	0-1/2	0-1/8	4 1/2
Cadillac V8-60, 60S	1938	3/4 N-0	1/4-1	1/8-1/8	4° 51'
Cadillac V65	1938	1 1/4 N-1/4 P	0-1/2	1/8-1/8	5° 38'
Cadillac V8-75	1938	1 1/4 N-1/4 P	0-1/2	1/8-1/8	5° 38'
Cadillac V16-90	1938	1 1/4 N-1/4 P	0-1/2	1/8-1/8	5° 38'
Cadillac V8-61, 60S	1939	G	GG	1/8-1/8	GH
Cadillac V8-75	1939	1 1/4 N-1/4 P	0-1/2	1/8-1/8	5° 1'
Cadillac V16-90	1939	1 1/4 N-1/4 P	0-1/2	1/8-1/8	5° 1'
Cadillac 40-60S, 62-V8	1940	N1-N2 1	0-3/4	1/8-1/8	5° 6'
Cadillac 40-72, 75-V8	1940	N1-N1	0-3/4	1/8-1/8	5° 6'
Cadillac 40-90-V16	1940	N1 1/2-N1	0-1/2	1/8-1/8	5° 1'
Chevrolet EC, EA, ED	1935				
Chevrolet FD-Master Conv.	1936	3-1/2	1-1/2	3/4-1/8	7 1/2 ± 1
Chevrolet FA, FC	1936				
Chevrolet GA, GB	1937				
Chevrolet HA, HB	1938	FA	FB	FC	FD
Chevrolet Master 85	1939	2 1/4 ± 1/4	1 ± 1/2	1/8-1/8	7 1/2 ± 1
Chevrolet Master Deluxe	1939	0 ± 1/2	1 1/2 N ± 1/2	0-1/8	4 1/2
Chevrolet Master 85	1940	2 1/4 ± 1/4	1 ± 1/2	1/8-1/8	7° 10'
Chevrolet DL & MDL	1940	0 ± 1/2	N 1/4 ± 1/2	0-1/8	4° 45'
Chrysler C1-Airflow	1935	2	1/4-3/4	1/8-1/8	4
Chrysler C2-Imp. Airflow	1935	2	1/4-3/4	1/8-1/8	4
Chrysler C7-Airstream	1936	1 1/2	1/4 N-1/2 P	0-1/8	9 1/2
Chrysler C8-DeL. Airstream	1936	1 1/2	1/4 N-1/2 P	0-1/8	5 1/4
Chrysler C9-Airflow	1936	2	1/2 ± 1/4	0-1/8	5
Chrysler C10-Airflow Imp.	1936	2	1/2 ± 1/4	0-1/8	5
Chrysler C11-Arf. Cust. Imp.	1936	2	1/2 ± 1/4	0-1/8	5
Chrysler C16-Royal	1937	1 1/2	1/4 N-1/2 P	0-1/8	4 1/2-6
Chrysler C14-Imperial	1937	1 1/2	1/4 N-1/2 P	0-1/8	4 1/2-6
Chrysler C16-Custom Imp.	1937	2	1/4 N-1/2 P	0-1/8	4 1/2-6
Chrysler C17-Airflow	1937	2	1/4-3/4	0-1/8	4 1/2-5 1/2
Chrysler C18-Royal	1938	1 1/2-2 1/2	1/4 N-1/2 P	0-1/8	4 1/2-6
Chrysler C19-Imperial	1938	1 1/2-2 1/2	1/4 N-1/2 P	0-1/8	4 1/2-6
Chrysler C20-Cust. Imp.	1938	1-3	1/4 N-1/2 P	0-1/8	4 1/2-6
Chrysler C22-Royal	1939	1 1/2-2 1/2	1/4 N-1/2 P	0-1/8	4 1/2-6
Chrysler C23	1939	1 1/2 N-1 1/2 P	1/4 N-1/2 P	0-1/8	5 1/2-7
Chrysler C24-Cust. Imp.	1939	1-3	1/4 N-1/2 P	0-1/8	4 1/2-6
Chry. Winds. & Royal C25	1940	N1-1	0-3/4	0-1/8	4 1/2-6

MAKE AND MODEL		FRONT AXLE			
		Caster (Degrees)	Camber (Degrees)	Toe-in (Inches)	Kingpin Inclination (Degrees)
Chry. Saratoga & N. Y. C26	1940	N1-1	0-3/4	0-1/8	4 1/2-6
Chrysler Crown Imp. C27	1940	N1-1	0-3/4	0-1/8	4 1/2-6
Crosley A.	1940	6-11	2	3/4-1 1/8	6 1/2
De Soto SF, SG	1935				
De Soto S1, S2	1936				
De Soto S3	1937	1 1/2	1/4 N-1/2 P	0-1/8	4 1/2-6
De Soto S5	1938	1 1/2-2 1/2	1/4 N-1/2 P	0-1/8	4 1/2-6
De Soto S6	1939	1 1/2-2 1/2	1/4 N-1/2 P	0-1/8	4 1/2-6
De Soto S7	1940	N1-1	0-3/4	0-1/8	4 1/2-6
Dodge DU	1935	2	1/2 ± 1/4	0-1/8	9 1/2
Dodge D2, D5, D8	1936-38	1-3	1/4-3/4	0-1/8	4 1/2-5 1/2
Dodge D11	1939	1 1/2 N-1 1/2 P	1/4 N-1/2 P	0-1/8	5 1/2-6 1/2
Dodge D14-D17	1940	N1-1	0-3/4	0-1/8	4 1/2-6
Ford 48-V8	1935	4 1/2-9	1/4-1	3/8	8
Ford 68-V8	1936	4 1/2-9	1/4-1	1/8	8
Ford 74-V8 (60 Hp.)	1937	4 1/2-9	1/4-1	1/8	8
Ford 78-V8 (85 Hp.)	1937	4 1/2-9	1/4-1	1/8	8
Ford 82A-V8 (60 Hp.)	1938	4 1/2-9	1/4-1	1/8	8
Ford 81A-V8 (85 Hp.)	1938	4 1/2-9	1/4-1	1/8	8
Ford 92A-V8 (60 Hp.)	1939	4 1/2-9	1/4-1	1/8	8
Ford 91A-V8 (85 Hp.)	1939	4 1/2-9	1/4-1	1/8	8
Ford V8-60	1940	8	1	1/8	8
Ford V8-85	1940	8	1	1/8	8
Graham 74-Standard	1935	1 1/2-2 1/2	1-2	1/8	7-7 1/2
Graham 73-Special	1935	1 1/2-2 1/2	1-2	1/8	7-7 1/2
Graham 72-Standard	1935	1 1/2-2 1/2	1-2	1/8	7-7 1/2
Graham 75-Super Ch.	1935	2	1	1/8	7
Graham 80, 80A-Crusader	1936	2 1/2	1	1/8	7 1/2
Graham 90-Cavalier	1936	2 1/2	1	1/8	7 1/2
Graham 90A-Cavalier	1936	4-4 1/2	1	1/8	7 1/2
Graham 110-Sup. Ch.	1936	2 1/2	1	1/8	7 1/2
Graham 85	1937	4 1/2-5 1/2	1	1/8	7 1/2
Graham 95	1937	4-4 1/2	1	1/8	7 1/2
Graham 116-Super Ch.	1937	3-4	1	1/8	7 1/2
Graham 120-Super Ch.	1937	3-4	1	1/8	7 1/2
Graham 96-Stand. & Spec.	1938	3-4	1	1/8	7 1/2
Graham 97-SC. & Cust. SC.	1938	3-4	1	1/8	7 1/2
Graham 96-Spec. & Cust.	1939	3-4	1	1/8	7 1/2
Graham 97-SC. & Cust. SC.	1939	3-4	1	1/8	7 1/2
Graham DeL. & Cust.	1940	3-4	1	1/8	7 1/2
Graham SC. & Cust. SC.	1940	3-4	1	1/8	7 1/2
Hudson GH	1935	3 1/4-3 3/4		0-1/8	7
Hudson HT-HU-HHU-HTL	1935	4-4 1/2	1-1 1/2	0-1/8	7
Hudson 63	1936	3 1/2-4 1/2	1-1 1/2	0-1/8	7
Hudson 64-5-6-7	1936	3 1/2-4 1/2	1-1 1/2	0-1/8	7
Hudson 73	1937	0-1/2	1-1 1/2	0-1/8	7
Hudson 74-5-6-7	1937	0-1/2	1-1 1/2	0-1/8	7
Hudson 89 (112)	1938	2-3	1-1 1/2	0-1/8	7
Hudson 83	1938	2-3	1-1 1/2	0-1/8	7
Hudson 84-5-7	1938	2-3	1-1 1/2	0-1/8	7
Hudson 90-98 (112)	1939	1 1/2 ± 1/2	1-1 1/2	0-1/8	7
Hudson 92-93	1939	1 1/2 ± 1/2	1-1 1/2	0-1/8	7
Hudson 95-97	1939	1 1/2 ± 1/2	1-1 1/2	0-1/8	7
Hudson Six & DeL. 6	1940	0 ± 1/4	1/2 ± 1/4	1/8 ± 1/8	3° 38'
Hudson Super & CC 6	1940	0 ± 1/4	1/2 ± 1/4	1/8 ± 1/8	3° 38'
Hudson Eight & CC 8	1940	0 ± 1/4	1/2 ± 1/4	1/8 ± 1/8	3° 38'
Hudson-Terraplane 81-82	1938	2-3	1-1 1/2	0-1/8	7
Hupmobile 822E	1938	1 1/2	1	1/8	8 1/2
Hupmobile 825H	1938	1 1/2	1 1/4	1/8	7 1/2
Hupmobile 915R, 922E	1939	1 1/2	1	1/8	7 1/2
Hupmobile 925H	1939	1 1/2	1 1/4	1/8	8 1/2

DATA



MAKE AND MODEL		FRONT AXLE			
		Caster (Degrees)	Camber (Degrees)	Toe-in (Inches)	Kingpin Inclination (Degrees)
La Fayette 3510	1935	2 1/2	1 1/2	1/8	7
La Fayette 3610	1936	2 1/2	1 1/2	1/8	7
La Salle 35-50, 36-50	1935-36	2	1 1/2	1/8	4 5/8
La Salle V8 37-50	1937	1 1/2	1 1/2	1/8	4° F1'
La Salle V8 38-50	1938	1 1/2	1 1/2	1/8	4° F1'
La Salle V8 39-50	1939	1 1/2	1 1/2	1/8	5° 6'
La Salle 40-50, 52	1940	1 1/2	1 1/2	1/8	5° 6'
Lincoln 321, 322	1936	1 1/2	1	1/8	7 1/2
Lincoln 351	1937	8	1	1/8	7 1/2
Lincoln 401 to 425	1938-39-40	1 1/2	1	1/8	7 1/2
Lincoln Zephyr 900	1936	4 1/2	1 1/2	1/8	8-8 1/2
Lincoln Zephyr HB	1937	1 1/2	1 1/2	1/8	3 1/2-4
Lincoln Zephyr 700, 96H	1938-39	1 1/2	1 1/2	1/8	3 1/2-4
Lincoln Zephyr V12	1940	4	1 1/2	1/8	4
Mercury 99A	1939	4 1/2	1 1/2	1/8	8
Mercury U8	1940	4 1/2	1 1/2	1/8	8
Nash 3640-400-Std. 6	1935-36	2 1/2	0-1 1/2	1/8	7
Nash 3640A-400 DeL. 6	1936	2 1/2	0-1 1/2	1/8	7
Nash 3620-Amb. Twn. Ign. 6	1936	2 1/2	0-1 1/2	1/8	7
Nash 3680-Amb. Twn. Ign. 8	1936	2 1/2	0-1 1/2	1/8	7
Nash 3720-Ambassador 6	1937	2 1/2	1 1/2	1/8	7
Nash 3780-Ambassador 8	1937	2	1 1/2	1/8	7
Nash 3820-Amb. 6	1938	1 1/2	1 1/2	0	7
Nash 3880-Amb. 8	1938	1 1/2	1 1/2	0	7
Nash 3920-Amb. 6	1939	1 1/2	1 1/2	0	7
Nash 3980-Amb. 8	1939	1 1/2	1 1/2	0	7
Nash 40-20	1940	0-N 1/2	1 1/2	1/8	4 1/2
Nash 40-80	1940	0-N 1/2	1 1/2	1/8	4 1/2
Nash Lafayette 3710-400	1937	2 1/2	1 1/2	1/8	7
Nash Lafayette 3810	1938	1 1/2	1 1/2	0	7
Nash Lafayette 3910	1939	1 1/2	1 1/2	0	7
Nash Lafayette 4010	1940	0-N 1/2	1 1/2	1/8	4 1/2
Oldsmobile F-35	1935	1 1/2	1 1/2	1/8	5
Oldsmobile L-35	1935	1 1/2	1 1/2	1/8	5
Oldsmobile F-36	1936	1 1/2	1 1/2	1/8	5 1/2
Oldsmobile L-36	1936	1 1/2	1 1/2	1/8	5 1/2
Oldsmobile F-37	1937	0-3/4	1 1/2	1/8	4 1/2
Oldsmobile L-37	1937	0-3/4	1 1/2	1/8	4 1/2
Oldsmobile F-38	1938	0-3/4	1 1/2	1/8	4 1/2
Oldsmobile L-38	1938	0-3/4	1 1/2	1/8	4 1/2
Oldsmobile 60	1939	0-3/4	1 1/2	1/8	4 1/2
Oldsmobile 70	1939	0-3/4	1 1/2	1/8	4 1/2
Oldsmobile 80	1939	0-3/4	1 1/2	1/8	4 1/2
Oldsmobile 6-60	1940	0-N 1/2	1 1/2	1/8	4° 51' 1/2
Oldsmobile 6-70	1940	0-N 1/2	1 1/2	1/8	4° 51' 1/2
Oldsmobile Cust. & Cruiser	1940	0-N 1/2	1 1/2	1/8	4° 51' 1/2
Overland	1939	3	2	1/8	7 1/2
Packard 120B	1936	2	1	1/8	1 1/2
Packard 1400, 1, 2	1936	1	1	0	9
Packard 1403, 4, 5-Super 8	1936	1	1	0	9
Packard 1407, 8-V12	1936	1	1	0	9
Packard 115C	1937	2 1/2	1 1/2	1/8	1 1/2
Packard 120C	1937	2 1/2	1 1/2	1/8	1 1/2
Packard 1500, 1, 2-Super 8	1937	2 1/2	1 1/2	1/8	1 1/2
Packard 1506, 7, 8-V12	1937	0-1/2	1 1/2	1/8	1 1/2
Packard 1600	1938	1 1/2	1 1/2	0	1° 54'
Packard 1601, 2	1938	1 1/2	1 1/2	0	1° 54'
Packard 1603, 4, 5-Super 8	1938	2 1/2	1 1/2	1/8	1 1/2
Packard 1607, 8° 1706, 7, 8	1938-39	0+0-1/2	1 1/2	1/8	1 1/2
Packard 1700	1939	1 1/2	1 1/2	1/8	1° 54'

MAKE AND MODEL		FRONT AXLE			
		Caster (Degrees)	Camber (Degrees)	Toe-in (Inches)	Kingpin Inclination (Degrees)
Packard 1701, 2	1939	1 1/2	1 1/2	0	1° 54'
Packard 1703, 5	1939	0	1 1/2	0	1° 54'
Packard 1800, 6	1940	1 1/2	1 1/2	0	1° 54'
Packard 1801, 8	1940	1 1/2	1 1/2	0	1° 54'
Packard 1803, 4, 5: Sup. 8	1940	1 1/2	1 1/2	0	1° 54'
Packard 1806, 7, 8: Sup. 8	1940	1 1/2	1 1/2	0	1° 54'
Pierce-Arrow 1601	1936	3/4	1	1/8	8
Pierce-Arrow 1602, 1603	1936	3/4	1	1/8	8
Pierce-Arrow 1701, 1801	1937-38	1 1/4	1	1/8	8
Pierce-Arrow V-12	1937-38	1 1/4	1	1/8	8
Plymouth PJ, PJ* Del.	1935	1-3	1 1/2	0	8 1/2
Plymouth P1, P2	1936	1-3	1 1/2	0	9 1/2
Plymouth P3, P4	1937	1-3	1 1/2	0	4 1/2-5 1/2
Plymouth P5	1938	3-5	1 1/2	0	4 1/2-5 1/2
Plymouth P6	1938	1-3	1 1/2	0	4 1/2-5 1/2
Plymouth P7	1939	1 1/2	1 1/2	0	5 1/2-6 1/2
Plymouth P8	1939	1 1/2	1 1/2	0	5 1/2-6 1/2
Plymouth P9 Roadking	1940	N1+1	1 1/2	0	4 1/2-6
Plymouth P10 De Luxe	1940	N1+1	1 1/2	0	4 1/2-6
Pontiac 701A-Standard	1935	0-E	1-2	0	7
Pontiac 701B-DeLuxe	1935	0-E	1-2	0	7
Pontiac 605	1935	0-E	1-2	0	7
Pontiac 35-26BB-Master 6	1936	0-1 1/2	1 1/2	0	7 1/2
Pontiac 35-26BA-DeLuxe 6	1936	0	1 1/2	0	8 1/2
Pontiac 35-26BA-Eight	1936	0	1 1/2	0	8 1/2
Pontiac 37-28CA	1937	3/4	1 1/2	0	4 1/2-5
Pontiac 37-38CA	1937	3/4	1 1/2	0	4 1/2-5
Pontiac 38-28DA	1938	3/4	1 1/2	0	4° 51'
Pontiac 38-28DA, 39-28	1938-39	3/4	1 1/2	0	4° 51'
Pontiac 39-25, 39-26	1939	1 1/2	1 1/2	0	4° 51'
Pontiac 40-25, 26	1940	N 1/2	1 1/2	0	4° 51'
Pontiac 40-28, 29	1940	N 1/2	1 1/2	0	4° 51'
Studebaker 1A, 2A-Dict.	1935	1 1/2	1 1/2	1/8	9 1/2
Studebaker 1B Commander	1935	1 1/2	1 1/2	1/8	9 1/2
Studebaker 3A-Dictator	1936	1-1 1/2	1-1 1/2	1/8	9 1/2
Studebaker 4A-Dict. Planar	1936	1 1/2	1 1/2	1/8	9 1/2
Studebaker 2C-President	1936	1 1/2	1 1/2	1/8	9 1/2
Studebaker 5A-Dictator	1937	1 1/2	1 1/2	1/8	5 1/2
Studebaker 6A-Dictator Pl.	1937	1 1/2	1 1/2	1/8	5 1/2
Studebaker 3C-President	1937	1 1/2	1 1/2	1/8	5 1/2
Studebaker 7A, 8A-Com.	1938	45'	1 1/2	1/8	5 1/2
Studebaker 4C-President	1938	45'	1 1/2	1/8	5 1/2
Studebaker G-Champion	1939	5 1/2	1 1/2	1/8	5 1/2
Studebaker 9A-Com.	1939	1 1/2	1 1/2	1/8	5 1/2
Studebaker 5C-President	1939	1 1/2	1 1/2	1/8	5 1/2
Studebaker Champion	1940	1-2	1 1/2	1/8	5 1/2
Studebaker 10A-Commander	1940	N 1/2	1 1/2	1/8	5 1/2
Studebaker 6C-President	1940	N 1/2	1 1/2	1/8	5 1/2
Terraplane G-Spec., GU-DeL.	1935	3 1/2	1-1 1/2	1/8	7
Terraplane 61-DeL., 62-Cust.	1936	3 1/2	1-1 1/2	0	7
Terraplane 71-DeL., 72-Super	1937	0-1/2	1-1 1/2	0	7
Willis 77	1933-35	1-2	2	1/8	7 1/2
Willis 77, 77A	1936	1-2	2	1/8	7 1/2
Willis 37	1937	3	2	1/8	7 1/2
Willis 38, 43	1938-39	3	2	1/8	7 1/2
Willis 44	1940	3	2	1/8	7 1/2

ABBREVIATIONS:

E—Empty (caster)
 FA—Master only—1 1/4 to 2 1/4
 FB—Master only—1/2 to 1 1/2
 FC—Master only—1/4 to 1 1/2
 FD—Master only—6 1/2 to 7 1/2

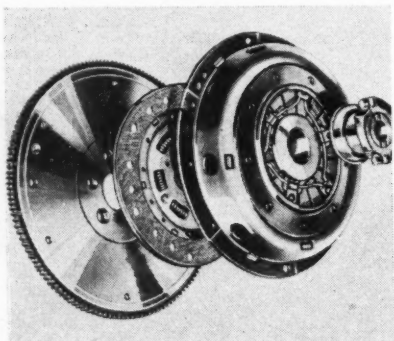
=—Plus or minus
 G—61-1 1/4N to 2 1/4N; 60S-1 1/4N to 1 1/4N
 GG—61-1 1/4N to 2 1/4N; 60S-1 1/4N to 1 1/4N
 GH—61-5° 6'; 60S-5° 44'
 L—Loaded
 N—Negative P—Positive

Service Hints from

Clutch Slippage— 8-Cylinder Models

The 1940 Pontiac eight-cylinder engine develops sufficient torque to cause clutch slippage and consequent damage to driven plate facings if the owner habitually starts the car in second gear while gunning the engine.

In order to eliminate this condition as much as possible, the clutch cover



spring load was increased from 1200 to 1400 lbs., starting at engine 8-217982. For service replacement the clutch cover and spring assembly having the 1400-lb. spring is carried in stock under Part No. 753615, the packages being marked "new style."

Whenever severe damage has resulted to the clutch through slippage as described above, the new style clutch cover and pressure plate should be installed when making repairs. *Factory Service Hints*

Headlight "Flare-Up"

Cases of headlights flaring up when the engine speed is increased from idling speed have been noted with the sealed beam headlight equipment used on the 1940 Oldsmobile. A certain amount of "flare-up" is to be considered normal when it is remembered that when the engine is idling the generator is not operating to capacity and the voltage at the headlights is approximately 5.8 volts; when the engine is speeded up to the point where the generator is charging, the battery voltage is raised to the regulator setting and there is an increase of approximately 1 volt at the headlights. This increase in voltage results in approximately 30 per cent

more light output. The 32-c.p. bulbs used prior to 1940 drew 4.25 amps. per bulb at from 5.9 to 6.1 volts, while the sealed beam lights draw approximately 7 amps. per unit at 6.4 volts.

If the amount of flare-up seems abnormal, then the condition of the battery as well as the wiring circuit should be checked.

Throttle Guard

Super eight and model 160 Packard cars equipped with Econo-Drive carry the Throttle Guard device to reduce stalling when operating in the road speed range of zero to 17 miles per hour. The guard is of basically the same construction as the distributor vacuum advance mechanism and, like the latter, is operated by manifold vacuum.

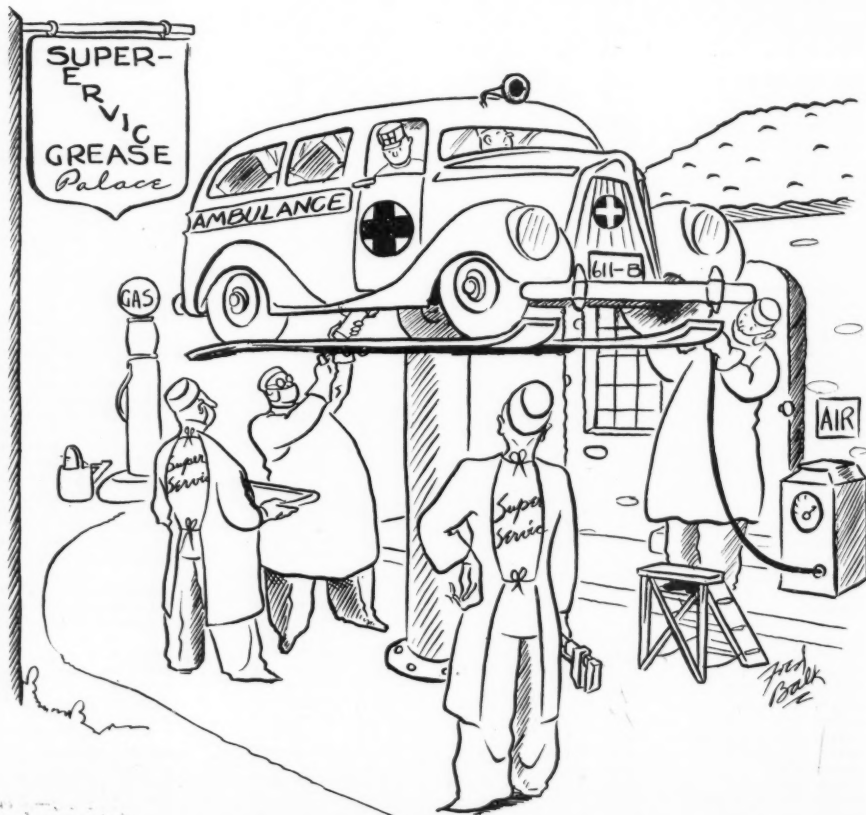
The device is correctly adjusted when it "cuts in" at four miles per hour car speed and "kicks out" or

becomes inoperative at a speed of nine miles per hour.

Adjustment procedure is as follows: Engine must be properly tuned and carburetor stop-screw adjusted to give 6 m.p.h. car speed on level road. Gap between end of diaphragm rod "A" and carburetor throttle lever should be approximately .020 in. Spring tension screw "B" should be turned in until distance from top of locknut to end of screw is approximately 7/32 in.

Get final adjustment on road with lock-out knob pushed all the way in and gearshift in high gear position. Pull car down to 4 m.p.h. slowly with the brakes and without pressure on the accelerator pedal. When the 4 m.p.h. point is reached, the throttle guard should "cut-in" and temporarily bring the car speed up to 9 m.p.h., then "kick out."

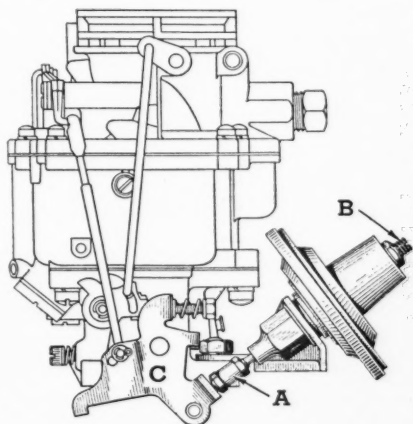
Opening of carburetor throttle can be noted by observing the foot accel-





the FACTORIES

erator which will move down slightly when the "cut in" speed is reached.



If the "kick out" occurs at higher than 9 m.p.h. increase the gap between diaphragm rod "A" and throttle lever; decrease the gap if the "kick out" occurs below 9 m.p.h. Similarly, if the "cut in" occurs above 4 m.p.h., decrease the spring tension by turning screw "B" out slightly and if the "cut in" occurs below 4 m.p.h. increase the spring tension.

Rattle at Steering Knuckle Support Arm

When wear occurs and excessive end play is present at the steering knuckle support arm and pin on 1939



and 1940 Champion Studebakers, a rattle may develop over certain types of roads.

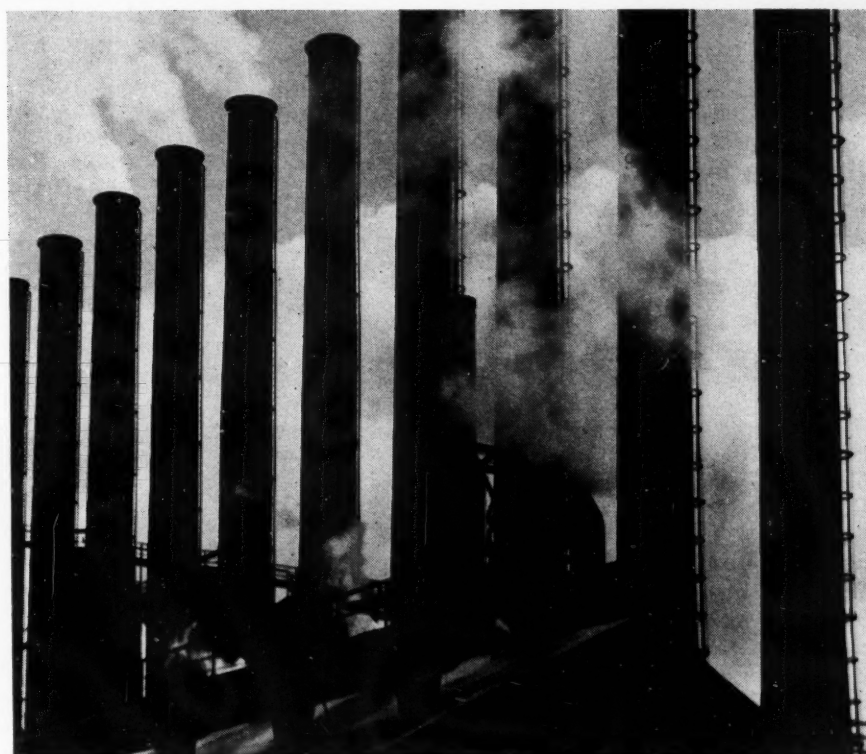
To provide a correction:

1. Raise the front end so the wheels are free.
2. Remove the steering knuckle support arm outer pin taper key.
3. Drive out the pin and remove the thrust washers.
4. Reassemble with new thrust washers of proper thickness to reduce the clearance between the support arm and the upper end of the steering knuckle to a minimum (not more than .003 in.)

Thrust washers or shims are available in three sizes:

Part No. 196048	.017 in.-.019 in. thick
" " 196049	.020 in.-.022 in. thick
" " 197558	.024 in.-.026 in. thick

Care must be used to make sure that the new thrust washers are properly aligned while the pin is being installed; otherwise, the washers will be damaged and excessive clearance and noise will reoccur within a short period.

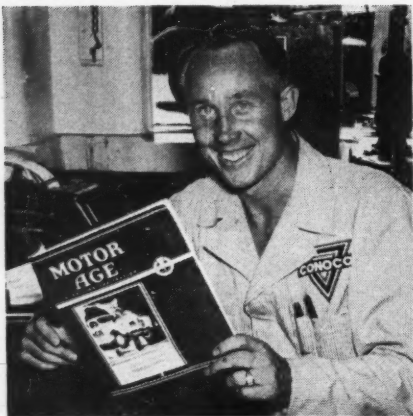


Control Arm Bushing

It has been found that some of the early models of the 1940 Chrysler cars, Model C-25, C-26 and C-27 have a bushing on the upper control arm of the front suspension that is incorrect for those models. This bushing may be identified by the fact that the depth of the hex head is only $\frac{1}{2}$ inch, whereas the correct bushing has a depth of $\frac{3}{4}$ inch. The correct bushing carries part number 854083.

Rear Spring Shackles

If tight or seized shackle pins are encountered on the rear springs of 1940 Chevrolet passenger cars, remove the pin and bushing assembly from the rear spring hanger. After removing, enlarge the eye in the hanger approximately .005 in. to .010 in., by using a drift. Then install a new pin and bushing assembly.



MOTOR AGE

SHOP OF THE MONTH



Rube Jolley, former newspaper sports editor, started in the automotive business with \$75 and a smile. That was in 1931. He still has his original smile but his investment in equipment has grown to \$7,500 and he owns one of Salt Lake City's busy one-stop stations. He has five mechanics and thirteen men working at his super-service station, handles all types of service work, grosses \$120,000 a year. His shop averages 20 jobs a day.

Here are two views (right) of Ullrey's Garage, Troy, O., where Walter R. Ullrey is boss. Been in business 27 years and has one of the best equipped small city shops in Ohio. Equipment investment is around \$12,000. Five mechanics at Ullrey's handle approximately 1000 shop orders a month, with an estimated annual volume of \$20,000.



Howard B. Reichard owns the Reichard Auto Repair shop (shown below), Troy, O., and undoubtedly gets a lot of heavy orders throughout the year. Employing five mechanics, Reichard's repairmen handle 500 monthly shop orders and an annual volume of \$45,000.

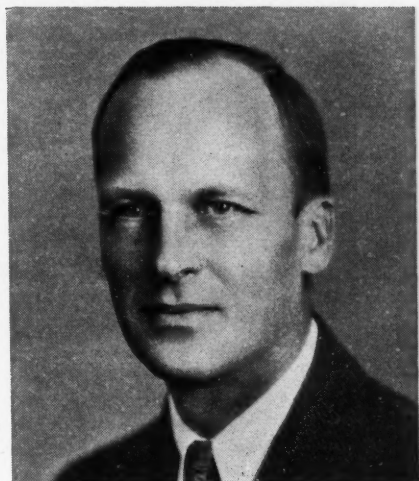




THE READERS'

CLEARING HOUSE

of Servicemen's Queries



Bill Toboldt, Editor, Motor Age

LOCK THE FREE-WHEELING CLUTCH

I am writing asking you about a 1933 Dodge which has the free-wheeling unit. Some one has taken the vacuum cylinder off, and it seems like I cannot lock it in conventional drive.

Have you a sketch of it, or will it not work unless the cylinder is on?

H. J. Benson, Hoskin's Garage, La-Grange, Mo.

IT seems to me that it should be relatively easy to pull the free wheeling operating lever forward and wire it in place. No doubt you have tried this, however, and have found that it will not stay in that position.

One thing you can do, and it is an operation that has been performed quite frequently, to entirely eliminate the free wheeling action. That is to remove the free wheeling clutch and weld the rollers in the positive position so that the inner and outer shells

of the free wheeling clutch will turn as one. This of course destroys the free wheeling action and makes the drive direct through the free wheeling clutch at all times.

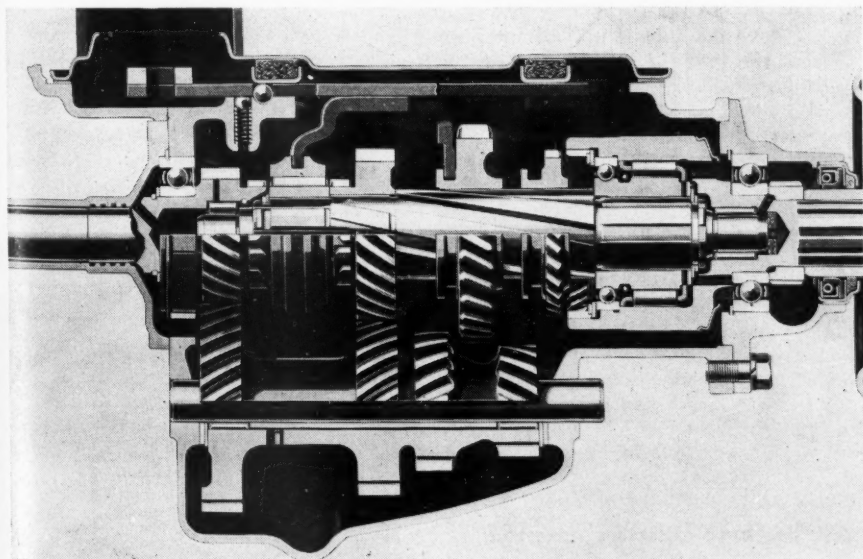
OCCASIONAL MISS

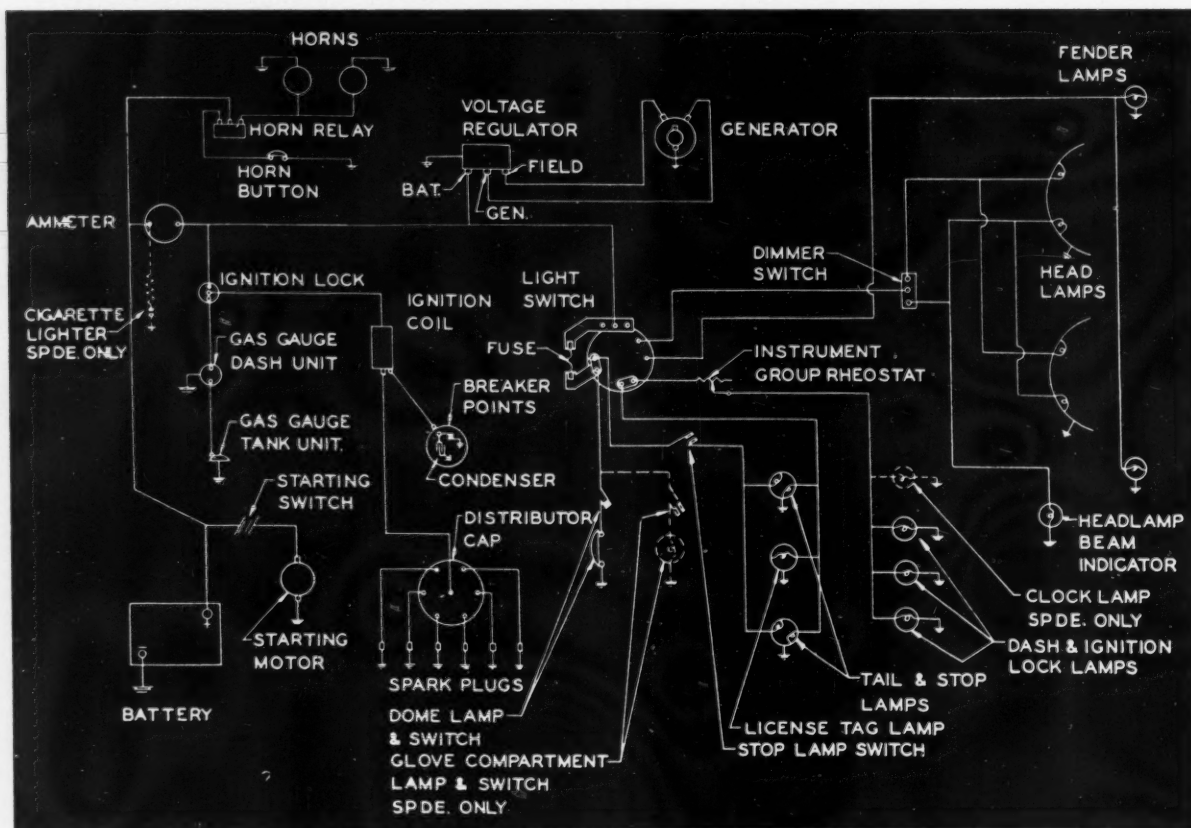
I have a 1939 Plymouth which misses occasionally at low and high speed—acts like spark plug trouble.

Removed the carburetor and disassembled it; found a high speed jet for a different model Plymouth which was two sizes too lean for this model. Checked the carburetor on a fuel analyzer and found it excessively lean, and even after installing the proper jet it still tested lean.

Checked the compression and found it to be 113 lbs. in all cylinders. Tested the condenser, found it O. K. for capacity and series resistance; coil is O. K.; wiring good; distributor cap O. K. Installed new plugs, set at .025 in. gap; breaker points set at .020 in. with a cam angle of 36 degrees. There is no valve loss and no ring loss.

There is only one thing that I found that might cause this trouble. When removing a spark plug and installing a compression gage and running the engine a little faster than 500 r.p.m., the pressure drops to between 60 and





Wiring diagram, 1940 Chevrolet

70 lbs., which is too high for good valve springs, I am told—a reading of 45 to 50 lbs. being the average.

A new carburetor was installed, but the engine still persists in missing a beat occasionally. A new fuel pump also was installed.

Fred Hamilton, Hamilton's Garage, What Cheer, Iowa.

THAT looks like a rather difficult piece of trouble on that 1939 Plymouth. However, there are two possible causes of the trouble that occur to me. First of all, your hunch in reference to the valve springs is good. In this connection, the valve spring pressure should be 77 to 83 pounds when the springs are compressed to a length of $1\frac{7}{16}$ inches, and 34 to 38 pounds when compressed to $1\frac{3}{4}$ inches. If you don't have a spring tester you undoubtedly could have them checked at a local jobber.

Another point to check would be for intake manifold leaks and leaks around the intake valve guides. The reason I think this is a possibility is that in spite of carefully checking the carburetor, you still get a lean mixture, and of course a manifold leak would cause such a condition.

While you have made no mention of it, I assume that you have carefully checked all the wiring and particularly the battery and battery ground connections. If not, I certainly would do so.

Another important point to check would be sticking valves. The fact

that your compression drops so much as you speed up the engine might be caused either by weak valve springs or by sticking valves. I'd try running some tune-up oil through the carburetor and see if this doesn't help to overcome the condition.

If you find some improvement, it might be advisable to counterbore the intake valve guides in order to reduce the tendency to stick. When counterboring the valve guides, they should be bored out approximately $\frac{1}{16}$ inch larger in diameter than the valve stem and should be bored to a depth of approximately $\frac{3}{8}$ inches.

Here's hoping these suggestions help lick your trouble.



"Well, I've been expecting something like this!"

CLUTCH CHATTER

I have a 1936 Pontiac in which I have replaced the clutch plate and adjusted the pressure plate, and taken up on the rear spring saddles.

The clutch works perfect when a new plate is installed, but in three to five thousand miles it jerks and chatters, and it is impossible to start the car forward or reverse without shaking the car until it seems that it will fall apart. This condition seems to be worse when the car is warmed up.

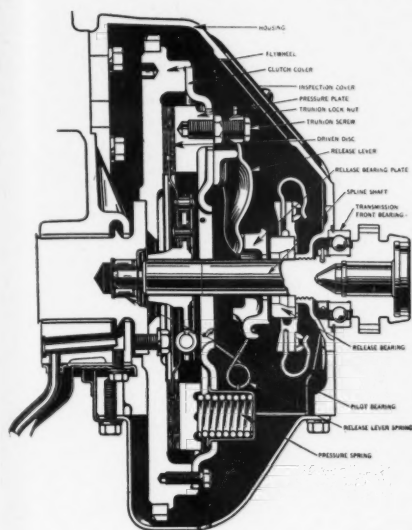
I have overhauled the motor completely, and replaced the motor mountings. Everything in the clutch is new.

Albert Vetric, Al's Garage, Tacoma, Washington.

ORDINARILY the complaint of a chattering clutch is greatly aggravated by loose rear spring saddles, loose spring clips and shackles, loose motor mountings or motor mountings that have served their useful life, as well as a condition of misalignment between the rear end of the motor and the flywheel housing. Your letter mentions that you have tightened the rear spring saddles and have replaced the motor mountings, but you do not mention that you have checked the rear spring shackles or that you have checked the alignment between the motor and the clutch housing.

My first suggestion, therefore, is that you check the rear spring

shackles and recheck the rear spring saddles. Then I would check the alignment of the clutch housing with the motor, and I would also check the fly-wheel for running true. Another point



that should be checked is the clutch shaft. It is possible that when this transmission was removed from the car it was allowed to hang in the fly-wheel by the clutch shaft which has bent the shaft slightly so that it is causing a strain on the hub of the clutch plate.

I understand that a change has been made in the clutch plate and that a new plate listed under Pontiac's part number 504719 is intended to be used in cases of severe clutch chatter when all of the other points have been put in proper condition.

CAMBER ADJUSTMENT

I am having trouble getting 1 deg. positive camber on a 1937 Model 115 Packard; also a 1939 Plymouth.

These cars have about 2 deg. negative camber and they have not been wrecked. I can find no part that seems to be bent, and of course the adjustment will not correct this much misalignment.

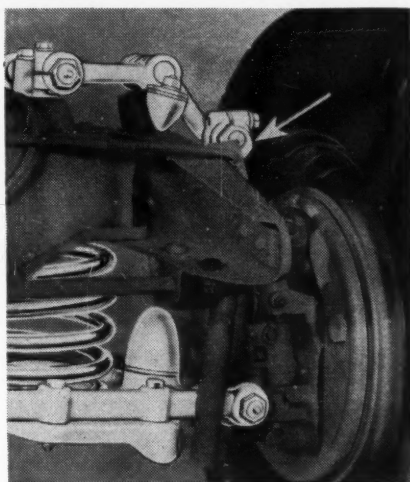
Thought you might tell me what part might be causing this trouble. Could it be a sagging front cross member?

Earl Alexander, Rockwood Motors, Inc., Rockwood, Tenn.



IN the case of Packard, it seems to me that you should have no difficulty in obtaining the proper adjustment by replacing the camber thimbles in the upper control arm. As you perhaps know, these thimbles are supplied for the purpose of changing camber, and they are furnished in three separate stages. I feel quite sure the use of these thimbles will enable you to get the proper camber setting.

Insofar as the 1939 Plymouth is concerned, if the eccentric pin will not give you the proper camber it is a pretty good indication that the steering knuckle support arm is bent and should be replaced with a new one. If the arm is only slightly bent it would be impossible for you to discern it with the naked eye, but the installation of a new arm would bring this job out to normal.



TRUCK PINION SHAFT

Please tell how the driving pinion only is replaced on an International truck, banjo type rear axle with a bearing on both sides of the pinion on the pinion shaft. What is the usual charge for the job? How can we figure the job from our new Flat Rate? Frank J. Diebel, Diebel Auto Co., Pigeon, Mich.

IN removing the pinion from an International truck using a banjo type rear axle housing, it is necessary to first disconnect the drive shaft at the rear universal, remove both axle shafts, and remove the housing rear cover plate. Next remove the differential assembly consisting of the ring gear, carrier and pinion. Then remove the pinion shaft retaining plate on the front side of the housing and pull the pinion shaft out toward the front. The shaft can be disassembled from the bearings and retainers after it has been removed as a unit.

The time for this operation would be our Flat Rate operation No. R9 less \$3 which would normally cover the cost of replacing the ring gear.

SHOP KINKS

Here's your chance to pick up a little cigarette money. We'll pay five bucks (\$5.00) for every Shop Kink accepted and printed. So send 'em in to us—some short cut you use in doing a job easier and quicker than the other fellow—some special tool you made when you couldn't buy one to do the job—and we'll do the rest. Here are some that were accepted this month:

PULLING AN AXLE SHAFT

WHEN removing an axle shaft from the rear axle housing, here's an easy way to get it out if it sticks.

Put the nut on the shaft, and then fasten a length of tow chain (about

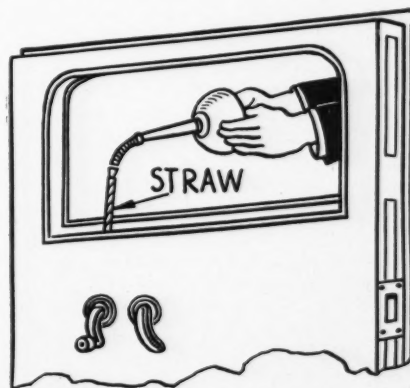


10 ft. long) around the shaft in back of the nut. Leave a little slack in the chain, and then yank it a few times with a whipping action, and the shaft will come out.—I. D. Swan, 205 E. Pershing Avenue, Springfield, Mo.

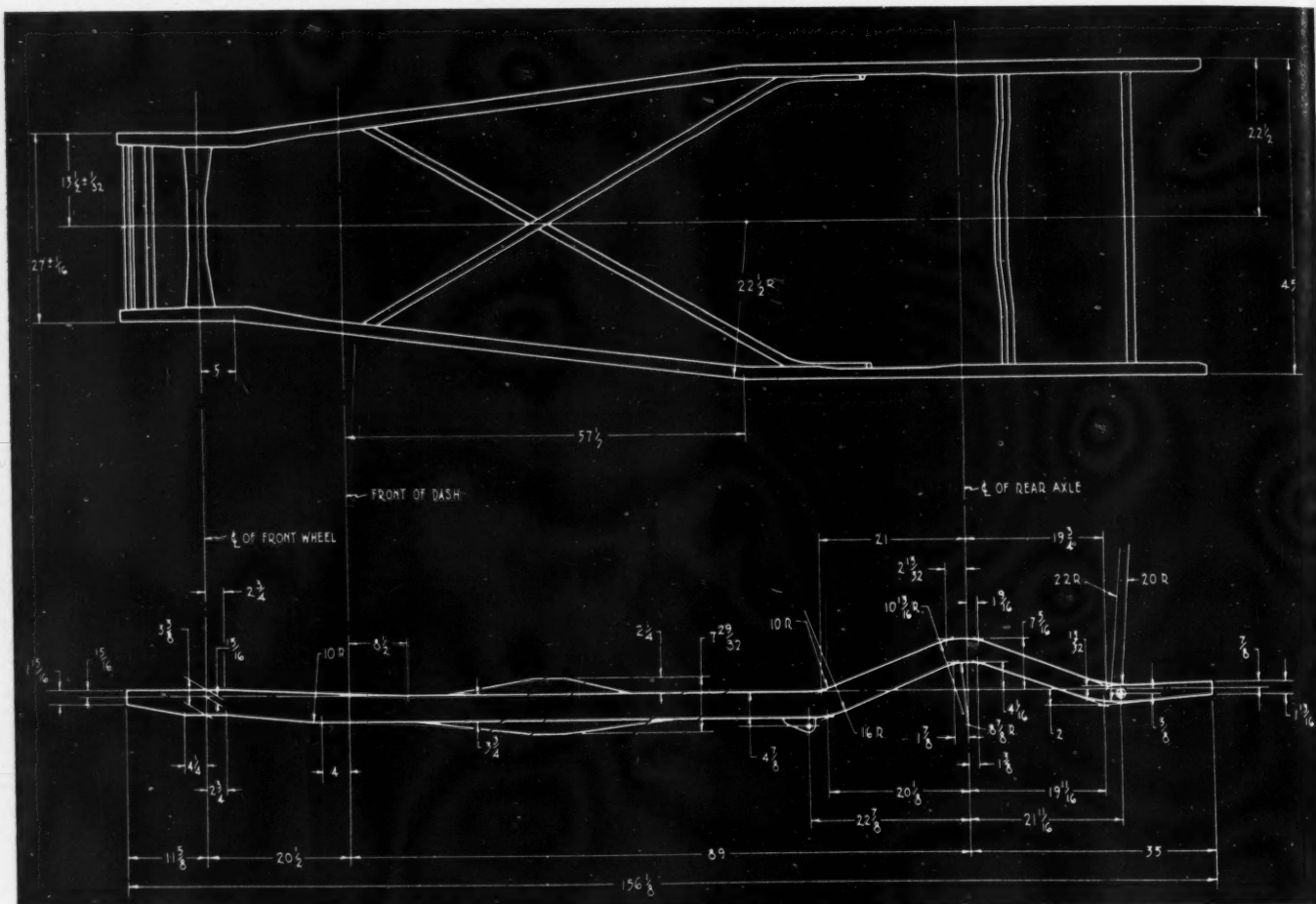
GETTING OIL TO WINDOW REGULATORS

WHEN the window glass regulators stick and it is difficult to raise and lower the glass, don't force the handle or you may strip the regulator teeth.

Get a soda-water straw and slide it down along the glass and past the glass channel until it contacts the window regulator. Then insert the spout of an oil can in the upper end of the straw and release a few drops



of oil. Moving the straw around a little will enable you to reach all parts of the regulator, so it will be thoroughly lubricated.—Roi Osborne, 206 W. 92nd Street, New York City.



Frame diagram, 1940 Studebaker Champion

How Thin?

I want to know when a six-cylinder engine block has had the maximum rebores and wear possible, before the walls are so thin as to be unsafe.

Anthong Thill, Ord, Nebraska.

YOUR letter asking how thin the cylinder walls can be and still be serviceable brings up a very interesting subject. You probably will find no two mechanics who will agree on a definite answer to this question.

It seems to be the consensus of opinion that the average six cylinder engine will stand reboring sufficiently to take a .060 in. oversize piston. That means taking out .030 in. of metal on each side of the cylinder. Beyond a .060 in. oversize piston, the average cylinder reconditioning shop recommends a sleeve.

It is our opinion that the cylinder walls should be at least $\frac{1}{8}$ in. thick in order to have a job in which it would be safe to run a piston.

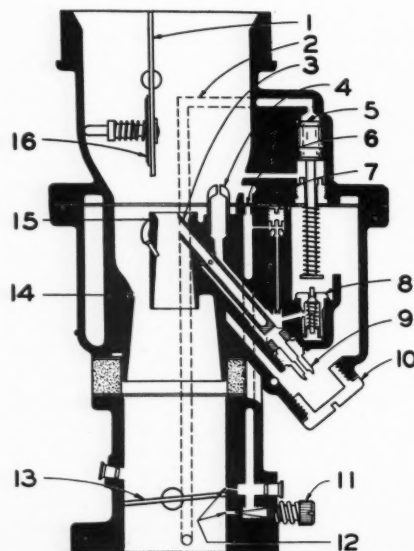
Miss at Low Speed

We have a 1938 Buick Series 40 which has a miss at low speed when in high gear and under a load. It will buck or jerk four or five times, then smooth out and run fine.

I cleaned the carburetor, checked

the float level and adjusted the carburetor with a vacuum gage. It idles swell and runs fine at all speeds except for this miss when picking up speed after shifting into high. This car is equipped with a Stromberg carburetor. I might add that it seems more like ignition trouble than carburetor trouble.

Fenton Baker, Fenton Baker Garage, Metropolis, Illinois.



THERE are two possibilities that might be responsible for this condition. The first is that the accelerating pump discharge nozzles are improperly located so that the stream of gas discharged through the nozzles is not properly directed. These little nozzles can be bent, and should be bent so that the stream of gas discharges against the side of the main venturi so that the gasoline will be properly broken up and atomized as it is drawn into the manifold. There are two of these nozzles, one for each barrel of the carburetor.

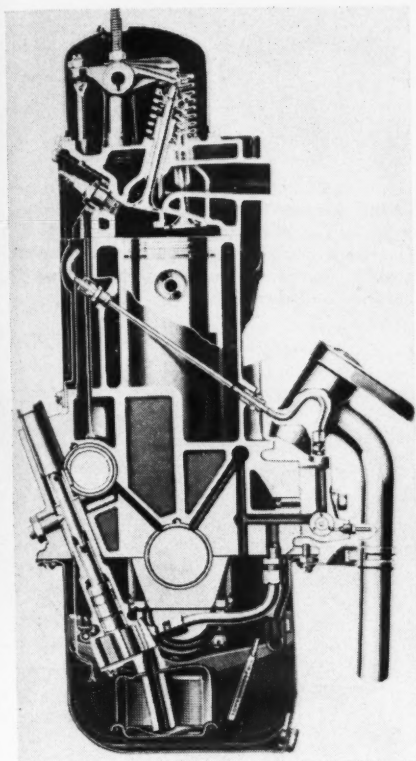
The other possibility is that the distributor housing is worn so that the distributor plate which, as you know, is supposed to advance, is becoming caught in the housing so that it sticks. My suggestion is that you have the distributor checked on an oscillograph to determine whether the advance mechanism is in proper working order. If it is not, it probably indicates that the housing is worn and should be replaced.

Oil Pressure Too High

We have a 1937 Master Deluxe Chevrolet that is carrying too high an oil pressure at high speeds. The crankcase is filled with S.A.E. 10 oil. At 30

m.p.h. it has an oil pressure of 15 lbs.; at 40 m.p.h., 18 lbs.; and at 50 m.p.h., 20 lbs., while at higher speeds it has a maximum pressure of 25 lbs. when hot.

We have cleaned the crankcase, tested and cleaned connecting rod oil nozzle pipes, and they throw uniform streams. We have blown through the other oil channels in the block. Have tried a new oil gage, and new pressure unit in the oil distributor body,



have left the unit out of the distributor body, but the pressure remains the same. Before removing the crankcase we did succeed in lowering the pressure about 3 lbs. by putting a can of break-in oil in the crankcase. This is what lead us to believe that there was a back pressure due to sludge that was responsible for this high pressure.

W. D. Munyan, Voorheesville, N. Y.

PERSONALLY, I have never worried about an engine that shows an excessive amount of oil pressure provided that I was sure the oil was going to all of the working parts.

It is possible that some of the oil passages in this particular block are slightly smaller than standard, which would account for the higher pressure. The only point I would caution you about and which was not mentioned in your letter is to be sure that the rocker arm shaft is free so that oil is going to all of the rocker arms. If you find that they are getting a sufficient supply of oil and you are sure that the points mentioned in your letter have been carefully checked so that there is no obstruction in those oil passages, I would have no further concern over the amount of oil pressure shown as long as it does not

drop. I can see no reason why an excessive pressure should cause any trouble and to my way of thinking it is a safeguard rather than an indication of trouble.

CARBURETOR FLOODS

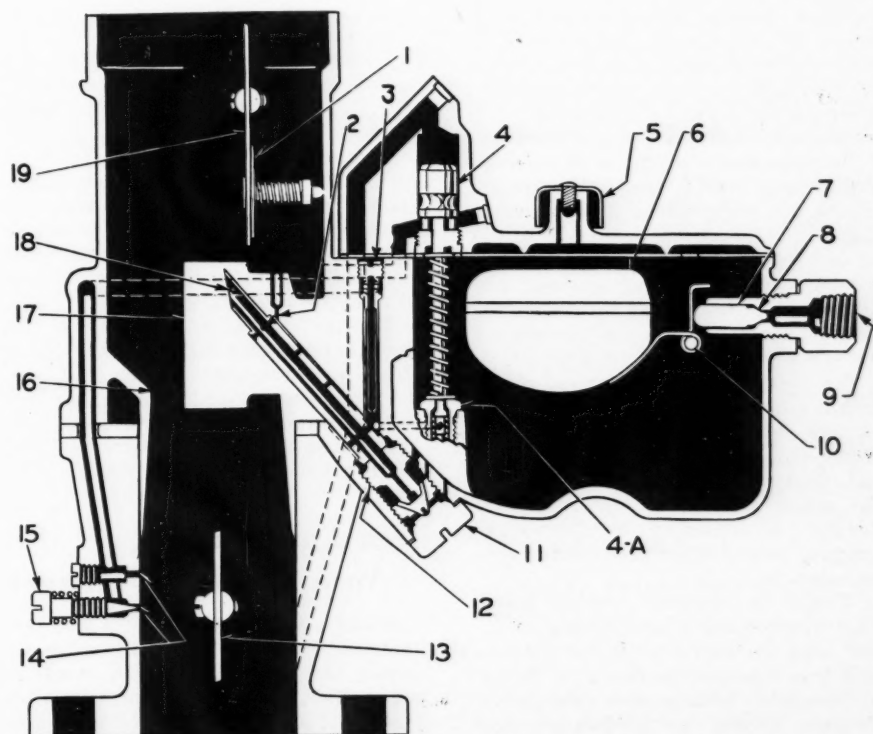
We have a customer with a 1937 Dodge that has a flooding condition between 15 and 20 miles per hour.

We have removed the carburetor, cleaned it out thoroughly, and adjusted the float level to $\frac{3}{8}$ in. Removed the distributor and cleaned it out, installed new plate, points and condenser, new plugs set to .027 in., and a new coil.

Vacuum is 19 inches, mileage around 19 m.p.g., and the car has good speed and power. We have no manifold leaks because the engine idles perfectly, but at 15 to 20 m.p.h. it acts as if the choke was on a little, to give it a rolling action. The automatic choke is in good condition.

Edwin J. Krejcie, Krejcie's Auto Service, Manitowoc, Wis.

THIS condition indicates to me that the spring on the economizer bypass valve, which is the little valve located in the bottom of the accelerating pump well, is weak. If this spring is weak, it allows the bypass valve to remain partly open and of course the mixture will run rich. My suggestion is that you replace this economizer bypass valve with a new one as I believe this will overcome your trouble.



FLYWHEEL

How do you pull the flywheel on Lincoln Model KB145-1932? Also what kind of a puller do you use? The reason for getting the flywheel off is to stop an oil leak. It is not known whether the leak comes from the rear main bearing trap or oil line.

Also on Nash-Lafayette 1937 Model 37-10. The main shaft in transmission was recently broken and replaced. Everything else looked OK, but it slips out of second going down a grade. Adjusted gear shift plunger as tight as possible and it helped only a little bit. Springs were not weak. John W. Middleton, 5101 Foothill Blvd., Oakland, Calif.

THE main trick in getting this flywheel off is to first pull out the three dowel pins which hold it in place. There are three of these pins $\frac{3}{8}$ in. in size. Any dowel pin puller will do this job, or if you do not have a puller, you can use a short length of $\frac{3}{8}$ -in. pipe and work the dowel pin out by using a nut on the pin against the length of the pipe.

The transmission difficulty you are experiencing with the 1937 Nash-Lafayette can be due to several conditions as a result of the main shaft breaking. My first suggestion, however is that you try to line up the transmission by installing the lower half only of the gasket between the transmission and the flywheel housing. This sometimes corrects this condition without additional work. If this does not do the trick, you will have to look for a bent shifter fork, loose main shaft bearings, end play in the main shaft, or poorly fitted gears.

NEWS

Proposal Would Require Servicemen To Report All Damaged Cars To Police

Filing of reports by servicemen on all damaged cars brought to them for service is proposed by Erie County Supervisor, Fred Hammer of Buffalo, N. Y. Reports would be filed periodically with local police and the State Motor Vehicle Bureau and would be used as a means of aiding authorities in bringing to justice hit-and-run drivers, reckless operators and persons employing automobiles for criminal purposes, it was reported.

Hammer plans to sponsor a bill in the New York State Legislature to set up such a report system. He said he had discussed his proposal with Buffalo Police Commissioner Glenn H. McClellan "who approved the idea and expressed his belief it would be of material help in apprehending violators of the type described."

Hammer also has talked over his plan with members of the Buffalo Board of Safety. Under the terms of the Hammer proposal, every owner of a car showing physical damage would be required to make a statement to the repair shop proprietor of the circumstances surrounding the damage.

This statement would be detailed in nature and would cover time, place, causes and every other vital phase of the crash. Immediate reporting to the police of any automobile accident is required under existing statute, but this mandate is ignored by the operator seeking to escape the penalty of the law.

The information thus supplied the repair shop owner would be inscribed by him on a special standard form provided by the State or the locality and filed at 48-hour intervals with the police and State Motor Vehicle Bureau, accompanied by "remarks" designed to assist the law enforcement agencies.

"Under the present system, police must proceed from repair shop to repair shop in their search for the car used in a hit-and-run death or injury or damaged during the commission of such crimes as hold-ups," said Hammer. "Mandatory report by re-

1940 Automobile Shows

Detroit	Oct. 12-19
New York	Oct. 12-19
Rochester	Oct. 12-19
Baltimore	Oct. 19-26
Buffalo	Oct. 19-26*
Newark	Oct. 19-26
Pittsburgh	Oct. 19-26
Washington, D. C.	Oct. 19-26
St. Louis	Oct. 20-26
Chicago	Oct. 26-Nov. 3
San Francisco	Nov. 1-9

* Tentative

furnish the authorities with a continuous picture of cars that have suffered physical damage."

A.S.I. Show Space Drawing In Chicago Sept. 6

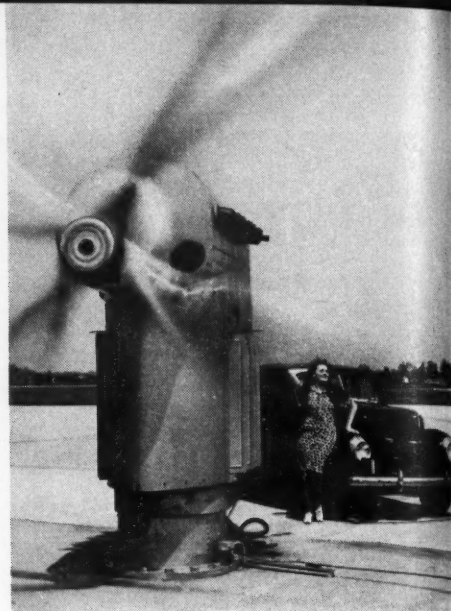
Drawing for exhibit space at the restyled A.S.I. Show will take place at 9 A.M. in the Stevens Hotel, Chicago, Sept. 6.

According to figures just released by A. B. Coffman, show manager, space reservations for this year received before the deadline for drawings, exceed by more than 8 per cent the total square footage reserved last year by deadline time.

This is attributed not only to the fact that the new layout of the Navy Pier where the show will be held Dec. 9-14 has encouraged some exhibitors to take larger space, but also the fact that there are more applications and for a greater number of booths.

New Engine Built for Nash Low-Price Entrant

Rumors that Nash Motors has developed a new automobile engine to power the low-priced Nash Ambassador 600 which the company will place in the mass automobile market in the fall were confirmed by W. A.



Wind Blown Ford. This huge cross-wind machine installed at Ford's test track at Dearborn enables engineers to study car's stability under various conditions of wind velocity and direction.



Whiz Fire. Manufacturing operations continue at R. M. Hollingshead Co. despite a million-dollar fire which completely wiped out a portion of the company's facilities. Administration building on the left was not damaged.

Blees, general sales manager, last month.

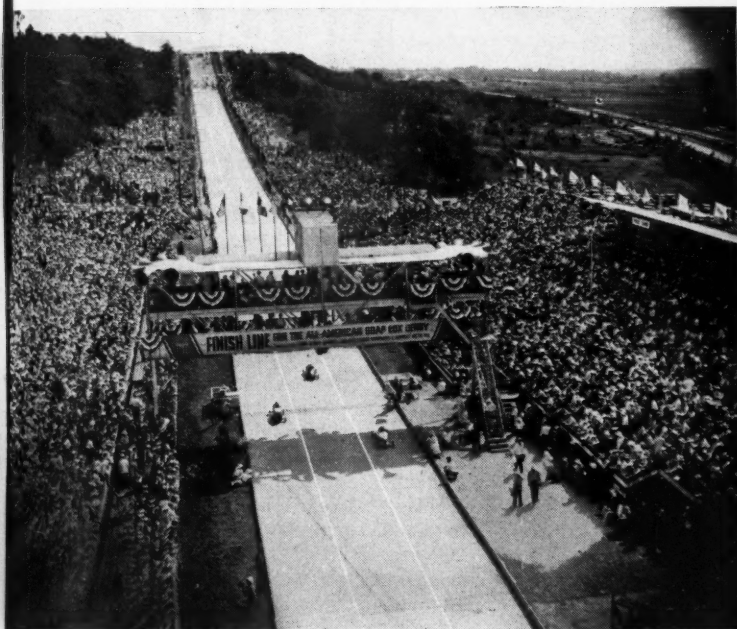
Blees reported that in actual road tests the new motor drove the car over 30 miles on a gallon of fuel at average city driving speeds. He said, however, that his company would not advertise the higher mileage figures, but would use "from 25 to 30 miles" a gallon, which, he explained, is the kind of economy average drivers can expect under good driving conditions. This, he pointed out, is exceptionally high mileage, especially for a big car which, he said, the new low-priced Nash will be.



Upsa-Da'sy. Larry Kieffer's Rol-a-way truck for flat tires is designed to end roadside tire changes by providing a means for the driver to roll his car on the truck and drive to the nearest service station. An adjustable spiked bolt beneath the drive-on wedge prevents the truck from sliding, while the flat is rolled on.



Injuries avoided but this freak accident caused a lot of car damage, near Watkins Glen, N. Y. Car on the right started up an inclined girder of the bridge, swept at an angle to the roof of the car at the left. There both stopped until some serviceman with a husky wrecker came along and unfastened the tangle.



Tommy Fisher. It was a Fisher body that won this year's Chevrolet All-American soap box derby. A soap box racer built by 12-year-old Tommy Fisher and driven to victory by the same Detroit youngster copped first prize in the Seventh Annual finals at Akron, last month. Here's Tommy flashing to victory before 50,000 soap box fans.



Fit For a Queen. Each year, the city of Flint, Mich., holds its Motor Festival. Chevrolet celebrated "Seven Million in Seven Years" with this float entered in the March of Motors parade. Seated on the garland throne, pretty Isobelle Welte, Chevrolet employee, is queen. Flint is ofttime considered runner-up to Detroit for the title "Capitol of the Automobile Industry."

M.E.M.A. Index Shows Decline

The report by Motor and Equipment Manufacturers Assn. issued in August indicated that shipments in all branches of the industry declined in June 1940. Manufacturers reporting their monthly business to M.E.M.A. showed that original equipment and service equipment continued above last year for the same month, while accessories continued below last year's figures and service parts, one point below June 1939. The grand index for all branches of the industry in June dropped to 140 per cent of the

January 1925 base as compared with 157 per cent for May 1940 and 125 per cent for June 1939.

Campaign to Help Sell Machine Shop Service

A direct mail advertising campaign to stimulate the sale of machine shop service has been prepared for members of the Automotive Engine Rebuilders Assn. It consists of 12 cards and is made available to only one firm in each territory, according to the announcement by R. G. Patterson, executive vice-president of A.E.R.A.

No Management Changes

A statement by Ward M. Canaday, chairman of the board of Willys Overland Motors, Inc., issued last month, was as follows: "No changes whatever are contemplated in the executive management of Willys Overland Motors, Inc."

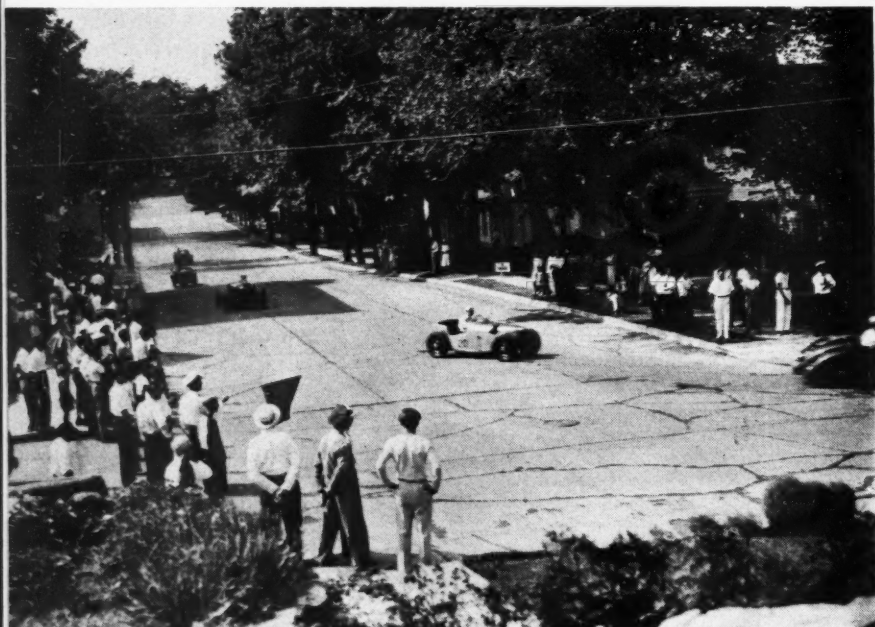
Southwest Automotive Show

The Fourth Annual Southwest Automotive Show is scheduled for Fort Worth, Tex., Jan. 16-19, 1941, in the Will Rogers Memorial Coliseum. Lionel J. Ellis is show manager.

One-Man Sub Barney Connett and his one-man submarine, cruising in Biscayne Bay off Florida, got caught in a strong Northeaster. Barney submerged his sub but one mile off shore it hit a coral reef. With two holes in the hull, water seeping in, Connett blew the tanks, rose to the surface and after a tough battle beached her safely on a sand bar. The sub is equipped with five regular automotive type Gould Kathanode batteries which supply power for the motors.

Road Race The gentlemen of American road racing are at it again (photo directly below). This time, Richard T. Wharton of New York won the fifth annual race through the streets and around the corners of Alexandria Bay, N. Y.

Prize Winner J. S. Doyle, Johns-Manville automotive staff manager, presents Joseph H. Keefer, Dubois, Pa., serviceman, with a check for \$1,000, first prize in the J-M 4 Star Brake Lining contest (bottom photo). The contest, opened to brake service dealers, was planned to stimulate highway safety promotional campaigns in the dealers' communities.



NEWS

Protection Against Diversion Of Highway Funds Sought

Problems of U. S. motorists will receive greater consideration at the election next November 5th than they have for many years, information reaching the American Petroleum Industries Committee from widely separated sections of the country indicates.

Tennessee motorists have urged the creation of legal barriers against diversions so strongly that more than 100 candidates for the legislature from both parties are reported to be advocating publicly, the adoption of legal methods to protect highway funds against future raids.

In North Carolina the dedication of special highway taxes to road purposes exclusively has become so popular with the public that all of the Democratic candidates for governor in this traditionally Democratic state, as well as many other candidates for other state offices, both Democrats and Republicans, are pledged to pursue this policy.

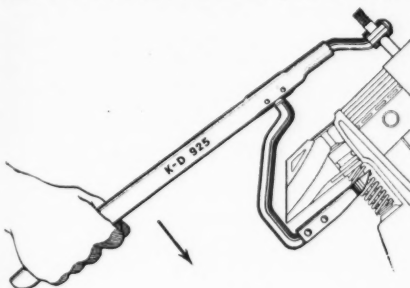
In Iowa and Indiana the state Republican parties have adopted platforms favoring the dedication of gasoline taxes and motor vehicle license fees to highway maintenance and construction only. The Iowa platform also asks that the gasoline tax be restricted to 3c. a gallon, and it suggests the enactment of legislation to remedy any inequalities in present motor vehicle transportation laws. The Indiana platform favors a 1c. reduction in the gasoline tax.

PROFIT MAKERS

PARTS • EQUIPMENT • TOOLS • ACCESSORIES

Valve Retainer Replacing Tool

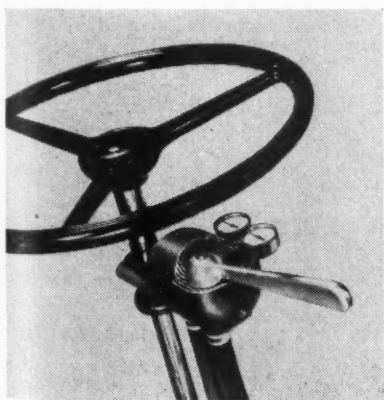
Illustration is of a tool recently announced by the K-D Mfg. Co., Lancaster, Pa., for replacing valve guide retainers as used on the Ford, Mercury and Lincoln-Zephyr cars. With the end of the tool engaged on one of the head studs, and the jaw between



the coils of the spring engaged on the flange of the guide, a downward pressure on the handle pulls the assembly down, permitting easy insertion of the retainer.

Trailer Brake Control Valve

To meet the increasing need for an accurate and dependable control valve for the control of trailer brakes on tractor-trailer combinations, the Bendix Products Division of Bendix Aviation Corp., 401 Bendix Drive, South

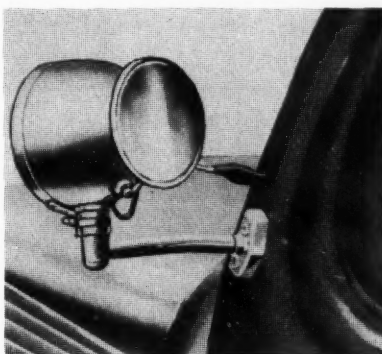


Bend, Ind., has announced an entirely new B-K hand valve known as their Model "RH" hand control valve. The valve is accurately calibrated so that the driver may make partial brake

applications as well as full emergency applications. Two vacuum gages are regular equipment; one registers the total vacuum available, and the other shows the applied vacuum, or the vacuum that actually exists in the control line.

Combination Spot Light And Mirror by Yankee

An accessory which combines the features of a spot light and a side view mirror has been developed by Yankee Metal Products Corp., Norwalk, Conn. Known as the Yankee Spotlight and Side-Vue Mirror, this new item is installed on the flange of the door by a clamp, making it unnecessary to drill holes for either the mounting bracket or for the wiring.

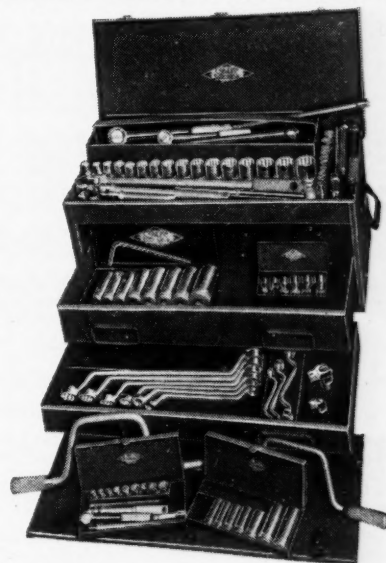


A special lead-in strip brings the wire through the door. The light throws a spot for a distance of 500 ft., according to the manufacturer. The unit is sturdy in construction, and the clamp is rigid enough so that normal vibration or even slamming the door does not change the position of the lamp, once it is set. Swivel adjustment is provided to assist in properly locating the light when installed. Price \$5.50.

Socketchest Contains Complete Tool Set

One of the items listed in the new catalog issued by The Sherman-Klove Co., 3535 West 47th St., Chicago, Ill., is the No. 4010 Socketchest. Packed in a heavy-duty chest 22 in. x 10 in. x 10 in., the assortment contains a complete selection of all necessary

sockets, handles, extensions, ratchets, universal joints and universal joint sockets in the 1/4-in., 3/8-in. and 1/2-in.



square drives. In the top compartment is an 18-in. tote tray; partitions in the top compartment are designed to accommodate a complete set of socket wrenches; the top drawer is arranged for box-end wrenches and miscellaneous small tools; the bottom drawer will accommodate the 3/4-in. drive heavy-duty sockets and other long, bulky tools. Price complete \$80.00; shipping weight 64 pounds.

Accessory Switch Panel

To provide space on the instrument panel of modern cars for switches governing the operation of accessories, the Cole-Hersee Co., 54 Old Colony Ave., Boston, Mass., has developed



an attractive panel into which are set the switch knobs. The knobs are lettered to indicate the accessory which they control. Provision is made for three switches in this auxiliary panel.

Mechanical Specifications

These Specifications Are Brought Up-to-Date Each Month by the

Line Number	MAKE AND MODEL	Lowest Priced 4-D. Sed. (Divd.)	Wheelbase (In.)	Tire Size (In.)	ENGINE																	CHASSIS						
					No. of Cylinders, Bore and Stroke	Taxable Hp.	Piston Displacement (Cu. In.)	Maximum Brake HP. at Specified R.P.M.	Compression Ratio (to —1)	Displacement Factor §	Cylinder Head Material	Camshaft Drive Make	Piston Material	Oil Cleaner Make	Air Cleaner Make	Carburetor Make	Muffler Make	Electrical System Make	Battery Make	Clutch	Type and Make	Gearset Make	Universals Type and Make	Rear Axle Type and Make	Rear Axle Ratio	Front Spring Suspension		
1	Bantam.....65		75	4.00/15	4-2.26x3.12	8.17	50.1	22-3800	7.40	.....	CI	Own	Als	No	AC	Zen	McK	AL	AL	P.Ro	WG	m-UP	½ Spi	5.25 Tr			
2	Buick.....40-40	996	121	6.50/16	8-3½x4½	30.6	248.0	107-3400	6.10	37.0	CI	LB	Ala	AC	AC	S-C	Hay	DR	Del	P.O.L	Own	Mp-G-S	½ Spi	4.40 IC				
3	Buick.....40-50	1109	121	6.50/16	8-3½x4½	30.6	248.0	107-3400	6.10	35.8	CI	LB	Ala	AC	AC	S-C	Hay	DR	Del	P.O.L	Own	Mp-G-S	½ Spi	4.40 IC				
4	Buick.....40-60	1211	126	7.00/15	8-3½x4½	37.8	320.2	141-3600	6.25	39.8	CI	LB	Ala	AC	AC	S-C	Hay	DR	Del	P.O.B	Own	Mp-G-S	½ Spi	3.90 IC				
5	Buick.....40-70	1359	126	7.00/15	8-3½x4½	37.8	320.2	141-3600	6.25	38.8	CI	LB	Ala	AC	AC	S-C	Hay	DR	Del	P.O.B	Own	Mp-G-S	½ Spi	3.90 IC				
6	Buick.....40-80	1553	133	7.50/16	8-3½x4½	37.8	320.2	141-3600	6.25	36.3	CI	LB	Ala	AC	AC	S-C	Hay	DR	Del	P.O.B	Own	Mp-G-S	½ Spi	4.18 IC				
7	Buick.....40-90	1942	140	7.50/16	8-3½x4½	37.8	320.2	141-3600	6.25	37.6	CI	LB	Ala	AC	AC	S-C	Hay	DR	Del	P.O.B	Own	Mp-G-S	½ Spi	4.55 IC				
8	Cadillac-V8.....40-60S	2090	127	7.00/16	8-3½x4½	39.2	346.0	135-3400	6.25	40.1	CI	Mor	Ala	No	AC	Str	Wal	DR	Del	P.Long	Own	Nb-Mec	½ Spi	3.92 IC				
9	Cadillac-V8.....40-62	1745	129	7.00/16	8-3½x4½	39.2	346.0	135-3400	6.25	40.5	CI	Mor	Ala	No	AC	Str	Wal	DR	Del	P.Long	Own	Nb-Mec	½ Spi	3.92 IC				
10	Cadillac-V8.....40-72	2670	139	7.50/16	8-3½x4½	39.2	346.0	140-3400	6.70	38.0	CI	Mor	Ala	No	AC	Str	Wal	DR	Del	P.Long	Own	Nb-Mec	½ Spi	4.31 IC				
11	Cadillac-V8.....40-75	2995	141	7.50/16	8-3½x4½	39.2	346.0	140-3400	6.70	38.6	CI	Mor	Ala	No	AC	Str	Wal	DR	Del	P.Long	Own	Nb-Mec	½ Spi	4.58 IC				
12	Cadillac-V8.....40-90	5140	141	7.50/16	16-3½x4½	67.6	431.0	185-3600	6.75	43.1	CI	Mor	Ala	AC	AC	Str	Wal	DR	Del	P.Long	Own	Nb-Mec	½ Spi	4.31 IC				
13	Chevrolet Master 85	740	113	6.00/16	6-3½x3¾	29.4	216.5	85-3400	6.25	34.0	CI	Var	CI	No	AC	Car	Var	DR	Del	P.Own	Own	Nb-Own	½ Spi	3.73 C				
14	Chevrolet DL & MDL	766	113	6.00/16	6-3½x3¾	29.4	216.5	85-3400	6.25	36.7	CI	Var	CI	No	AC	Car	Var	DR	Del	P.Own	Own	Nb-Own	½ Spi	4.11 IC				
15	Chrysler.....C-25	995	122½	6.25/16	6-3½x4½	27.3	241.5	108-3600	6.50	36.6	CI°	Mor	AI	Pur	AC	Car	NS	AL	Wil	P.B&B	Own	Cb-UP	½ Spi	3.90 IC				
16	Chrysler.....C-26	1180	128½	7.00/15	8-3½x4½	33.8	323.5	135-3400	6.80	43.7	CI°	M-W	AI	Pur	AC	Str	NS	AL	Wil	P.B&B	Own	Cb-UP	½ Spi	3.91 IC				
17	Chrysler.....C-27	145½	145½	7.50/15	8-3½x4½	33.8	323.5	137-3400	6.80	39.9	AI	M-W	AI	Pur	AC	Str	NS	AL	Wil	P.B&B	Own	Cb-UP	½ Spi	4.55 IC				
18	Crosley.....A	1362	80	4.25/12	2-3x2½	7.2	38.9	15-4200	5.50	.....	CI	For	CI	Pur	AC	Til	Rex	AL	AL	P.Ro	WG	St	½ Spi	5.14 C			
19	De Soto.....S-7	945	122½	6.00/16	6-3½x4½	27.3	228.1	100-3600	6.50	37.6	CI°	Mor	AI	Pur	AC	Car	NS	AL	Wil	P.B&B	Own	Cb-UP	½ Spi	4.10 IC				
20	Dodge.....D-14-17	855	119½	6.00/16	6-3½x4½	25.3	217.8	87-3600	6.50	36.8	CI	Mor	Als	Pur	AC	Str	NS	AL	AL	P.B&B	Own	Nb-UP	½ Spi	4.10 IC				
21	Ford V8-80.....1940	1685	112	5.50/16	8-2.6x3.2	21.6	136.0	60-3500	6.60	28.1	AI	Dia	CS	No	Yes	Own	Own	O	Own	P.Os	Own	m-Spi	¾ Spi	4.44 Tr				
22	Ford V8-85.....1940	1725	112	6.00/16	8-3½x3¾	30.0	221.0	85-3600	6.15	36.2	CI	Dia	CS	No	Yes	Own	Own	O	Own	P.Os	Own	m-Spi	¾ Spi	3.78 Tr				
23	Graham DeL. & Cus.	995	120	6.00/16	6-3½x4½	25.3	217.8	92-3800	6.65	.....	CI	LB	Als	No	AC	Car	Old	DR	Wil	P.Long	WG	Nb-UP	½ Spi	4.27 C			
24	Graham Sc & Cus. Sc	1130	120	6.25/16	6-3½x4½	25.3	217.8	120-4000	6.65	.....	CI	LB	Als	No	AC	Car	Old	DR	Wil	P.Long	WG	Nb-UP	½ Spi	4.27 C			
25	Hudson Six & DeL.	763	113	(h)	6-3x4½	21.6	175.0	92-4000	7.00	33.5	CI	Ge	Als	No	AC	Car	Old	AL	Nat	Pw.Own	Own	Nb-Spi	½ Spi	4.55 IC				
26	Hudson Sup. & CC. 6	870	118-125	(i)	6-3x5	21.6	212.0	102-4000	6.50	35.4	CI	Ge	Als	No	AC	Car	Old	AL	Nat	Pw.Own	Own	Nb-Spi	½ Spi	4.11 IC				
27	Hudson.....8 & CC. 8	952	118-125	(k)	8-3x4½	28.8	254.0	128-4200	6.50	40.9	CI	Ge	Als	No	AC	Car	Old	AL	Nat	Pw.Own	Own	Nb-Spi	½ Spi	4.11 IC				
28	Hupmobile.....R-015	1145	115	6.00/16	6-3½x4½	29.4	245	101-3600	6.50	.....	CI													4.27 C			
29	La Salle.....40-50, 52	1320	123	7.00/16	8-3½x4½	36.4	322.0	130-3400	6.25	40.3	CI	Mor	Ala	No	AC	Car	Wal	DR	Del	P.Long	Own	Nb-Mec	½ Spi	3.92 IC				
30	Lincoln-V12.....1940	1400	136-145	7.50/17	12-3½x4½	46.8	414.0	150-3400	6.38	38.5	AI	Mor	AI	Pur	AC	Str	Old	AL	Exi	P.Os	Own	m-Spi	FF Tim	4.58 C				
31	Lincoln-Zephyr.....1940	1400	125	7.00/16	12-2½x3¾	39.6	292.0	120-3500	7.20	43.0	AI	Dia	CS	No	Yes	Own	Own	O	Own	P.Os	Own	m-Spi	¾ Spi	4.44 Tr				
32	Mercury.....1940	1960	116	6.00/16	8-3.187x3½	32.5	239.0	95-3600	6.15	33.8	CI	Dia	CS	.....	AC	Own	Own	O	Own	P.Os	Own	m-Spi	¾ Spi	3.54 Tr			
33	Nash-Lafay.....4010	875	117	6.00/16	6-3½x4½	27.3	234.8	99-3400	6.30	36.8	CI	Whit	Als	No	AC	Car	Wal	AL	USL	P.B&B	Own	Nb-Mec	½ Spi	4.10 IC				
34	Nash.....Amb. 6, 4020	985	121	6.25/16	6-3½x4½	27.3	234.8	105-3400	6.00	35.4	CI	Whit	Als	BS	AC	Car	Wal	AL	USL	P.B&B	Own	Nb-Mec	½ Spi	4.10 IC				
35	Nash.....Amb. 8, 4080	1195	125	7.00/15	8-3½x4½	31.2	260.8	115-3400	6.00	35.2	CI	Dia	Als	BS	AC	Car	Wal	AL	USL	P.B&B	Own	Nb-Mec	½ Spi	4.10 C				
36	Oldsmobile.....60	899	116	6.00/16	6-3½x4½	28.4	229.7	95-3400	6.10	37.8	CI	Whit	Ala	No	AC	Car	Var	DR	Del	P.B&B	Own	Rb-Mec	½ Spi	4.11 IC				
37	Oldsmobile.....70	963	120	6.50/16	6-3½x4½	28.4	229.7	95-3400	6.10	37.8	CI	Whit	Ala	No	AC	Car	Var	DR	Del	P.B&B	Own	Rb-Mec	½ Spi	4.30 IC				
38	Oldsmobile.....90	1131	124	7.00/15	8-3½x3¾	33.8	257.1	110-3600	6.20	37.2	CI	LB	Ala	No	AC	Car	Var	DR	Del	P.B&B	Own	Rb-Mec	½ Spi	4.30 IC				
39	Packard.....110	975	122	6.25/16	6-3½x4½	29.4	245.0	100-3200	6.39	40.5	CI	Mor	Als	No	AC	Str	Wal	AL	PO	Ps.Long	Own	Rb-Mec	½ Spi	4.11 IC				
40	Packard.....120	1146	127	6.50/16	8-3½x4½	33.8	282.0	120-3600	6.41	40.3	CI	Mor	Als	No	AC	Str	Wal	AL	Wil	Ps.Long	Own	Rb-Mec	½ Spi	4.09 IC				
41	Packard.....160-80	1632	127-38-48	7.00/16	8-3½x4½	39.2	356.0	160-3500	6.45	43.8	CI	Mor	Als	.....	AC	Str	Wal	AL	Wil	Ps.Long	Own	Rb-Mec	½ Spi	(b) IC			
42	Plymouth.....P9	740	117½	5.50/16	6-3½x4½	23.4	201.3	84-3600	6.70	34.6	CI°	Mor	AI	Pur	AI	Car	NS	AL	AL	P.B&B	Own	Nb-UP	½ Spi	3.90 IC				
43	Plymouth.....P10	805	117½	6.00/16	6-3½x4½	23.4	201.3	84-3600	6.70	34.8	CI°	Mor	AI	Pur	AI	Car	NS	AL	AL	P.B&B	Own	Nb-UP	½ Spi	4.10 IC				
44	Pontiac 6.....40-25	876	117	6.00/16	6-3½x4	28.3	222.7	87-3520	6.50	38.2	CI	Mor	CNI	No	AC	Car	Var	DR	Del	P.In	Own	Rb-Mec	½ Spi	4.30 IC				
45	Pontiac 6.....40-26	932	120	6.00/16	6-3½x4	28.3	222.7	87-3520	6.50	37.4	CI	Mor	CNI	No	AC	Car	Var	DR	Del	P.In	Own	Rb-Mec	½ Spi	4.30 IC				
46	Pontiac 8.....40-28	970	120	6.50/16	8-3½x3¾	33.8	248.9	100-3700	6.50	39.8	CI	Mor	CNI	No	AC	Car	Var	DR	Del	P.In	Own	Rb-Mec	½ Spi	4.30 IC				
47	Pontiac 8.....40-29	1072	122	6.50/16	8-3½x3¾	33.8	248.9	103-3700	6.50	38.0	CI	Mor	CNI	No	AC	Car	Var	DR	Del	P.In	Own	Rb-Mec	½ Spi	4.30 IC				
48	Studebaker Champ.	740	117½	5.50/16	6-3x3¾	21.6	164.3	78-4000	6.50	38.7	CI	Dia	Ly	No	AC	Car	Wal	AL	Wil	P.B&B	WG	Nb-Spi	½ Spi	4.55 IT				
49	Studebaker Com.10A	965	117½	6.25/16	6-3¾x4½	26.3	226.0	90-3400	6.00	39.9	CI	Dia	Ly	Fram	AC	Str	Old	DR	Wil	P.B&B	WG	Nb-Spi	½ Spi	4.55 IT				
50	Studebaker Pres.6C	1095	117½	6.50/16	8-3½x4½	30.0	250.4	110-3600	6.00	40.9	CI	Dia																

ABBREVIATIONS-General

*Others also

*Measured on rim of Flywheel
(1)-22 on Ford V8, 21 on DeL. Ford V8.

1/2 Semi-floating

3/4 Three-quarter floating
11-With clearance of .015 the valve is .004 off its seat.

Tune-Up Specifications

Car Manufacturers and Supersede All Others Previously Published

				RINGS				VALVES										IGNITION								FRONT AXLE						
Service Brake Make and Type	Steering Gear Make and Type	Compression Pressure at Cranking Speed (Lbs.)	Spark Plug Make and Type	No. and Width Comp.	No. and Width Oil	Piston Pin Diameter	Piston Pin Locked In	Head Diameter and Seat Angle			Operating Tappet Clearance	Intake Valve Opens Before or After T. C.		Breaker Points Gap (Ins.)	Timing			Rods Removed From	Crankpin Diameter (Ins.)	Crankpin Length (Ins.)	Capacity Crankcase (Qts.)	Capacity Cooling System (Qts.)	Caster (Degrees)	Camber (Degrees)	Toe-in (Inches)	King Pin Inclination (Degrees)	Line Number					
								Inlet (Ins.)	Exhaust (Ins.)	Stem Diameter (Ins.)		Inlet	Exhaust		Inlet Tappet Clearance for Valve Timing	No. of Degrees	No. of Flywheel Teeth											Spark Plug Gap (Ins.)	Spark Occurs °C	No. of Flyw. Teeth Spark Occurs TC	Breaker Housing	
OM R	135 Ch-H-10	2-3/4	1-3/8	2-3/4	1-3/8	2-3/4	1-3/8	1-1/8	45	1-1/8	45	.279	.011H	.012H	.011	19B	.....	.022	.025	4BT	.....	Au	A	1-1/4	1	3	5 1/2	15	1-1/4	1-1/8	1-1/2	1
BH S	112 AC-46	2-3/4	1-3/8	2-3/4	1-3/8	2-3/4	1-3/8	1-1/8	45	1-1/8	45	.372	.015H	.015H	1-1/8	13B	5 1/4 B	.015	.025	4B	1-1/4 B	Au	A	2	1-1/4	8	12 1/2	3 1/2	1-1/4	1-1/8	3 1/4	2
BH S	112 AC-46	2-3/4	1-3/8	2-3/4	1-3/8	2-3/4	1-3/8	1-1/8	45	1-1/8	45	.372	.015H	.015H	1-1/8	13B	5 1/4 B	.015	.025	4B	1-1/4 B	Au	A	2	1-1/4	8	12 1/2	3 1/2	1-1/4	1-1/8	3 1/4	3
BH S	114 AC-46	2-3/4	1-3/8	2-3/4	1-3/8	2-3/4	1-3/8	1-1/8	45	1-1/8	45	.372	.015H	.015H	1-1/8	14B	6B	.015	.025	6B	1-1/4 B	Au	A	2 1/4	1-1/4	10	16	3 1/2	1-1/4	1-1/8	3 1/4	4
BH S	114 AC-46	2-3/4	1-3/8	2-3/4	1-3/8	2-3/4	1-3/8	1-1/8	45	1-1/8	45	.372	.015H	.015H	1-1/8	14B	6B	.015	.025	6B	1-1/4 B	Au	A	2 1/4	1-1/4	10	16	3 1/2	1-1/4	1-1/8	3 1/4	5
BH S	114 AC-46	2-3/4	1-3/8	2-3/4	1-3/8	2-3/4	1-3/8	1-1/8	45	1-1/8	45	.372	.015H	.015H	1-1/8	14B	6B	.015	.025	6B	1-1/4 B	Au	A	2 1/4	1-1/4	10	18	3 1/2	1-1/4	1-1/8	4-5	6
BH S	114 AC-46	2-3/4	1-3/8	2-3/4	1-3/8	2-3/4	1-3/8	1-1/8	45	1-1/8	45	.372	.015H	.015H	1-1/8	14B	6B	.015	.025	6B	1-1/4 B	Au	A	2 1/4	1-1/4	10	18	3 1/2	1-1/4	1-1/8	4-5	7
BH S	155x AC-104	2(c)	2-3/4	2-3/4	1-3/8	2-3/4	1-3/8	1-1/8	45	1-3/4	45	.341	AA	AA	AA	TC	.....	.015	.027	5B	.....	Au	A	2-46	2-1/4	7	24 1/2	(nn)	0 to +1	1-1/4	5° 6'	8
BH S	155x AC-104	2(c)	2-3/4	2-3/4	1-3/8	2-3/4	1-3/8	1-1/8	45	1-3/4	45	.341	AA	AA	AA	TC	.....	.015	.027	5B	.....	Au	A	2-46	2-1/4	7	24 1/2	(nn)	0 to +1	1-1/4	5° 6'	9
BH S	170x AC-104	2(c)	2-3/4	2-3/4	1-3/8	2-3/4	1-3/8	1-1/8	45	1-3/4	45	.341	AA	AA	AA	TC	.....	.015	.027	5B	.....	Au	A	2-46	2-1/4	7	24 1/2	(nn)	0 to +1	1-1/4	5° 6'	10
BH S	170x AC-104	2(c)	2-3/4	2-3/4	1-3/8	2-3/4	1-3/8	1-1/8	45	1-3/4	45	.341	AA	AA	AA	TC	.....	.015	.027	5B	.....	Au	A	2-46	2-1/4	7	24 1/2	(nn)	0 to +1	1-1/4	5° 6'	11
BH S	180x AC-104	2(c)	2-3/4	2-3/4	1-3/8	2-3/4	1-3/8	1-1/8	45	1-3/4	45	.341	AA	AA	AA	6B	.....	.015	.032	6B	.....	Au	A	2-00	1-1/4	11	30	N 1/2-N1	0 to +1	1-1/4	5° 1'	12
OH O	AC-44	2-1/2	1-1/8	2-1/2	1-1/8	2-1/2	1-1/8	1-1/8	30	1-1/4	30	.340	.006H	.013H	.006	3B	.....	.021	.040	5B	.....	Au	A	2-1/4	1-1/4	5	14	2 1/4-1 1/2	1-1/4	1-1/8	7° 10'	13
OH O	AC-44	2-1/2	1-1/8	2-1/2	1-1/8	2-1/2	1-1/8	1-1/8	30	1-1/4	30	.340	.006H	.013H	.006	3B	.....	.021	.040	5B	.....	Au	A	2-1/4	1-1/4	5	14	0-1/2	1-1/4	1-1/8	4° 45'	14
LH G	145x AL-A7B	2-1/2	2-3/4	2-1/2	2-3/4	2-1/2	2-3/4	1-1/8	45	1-1/4	45	.340	.008H	.010H	.014	12B	.....	.020	.025	TC	TC	Au	A	2-1/2	1-1/4	5	18	N1to+1	0 to +1	0-1/2	4 1/4-6	15
LH G	155x AL-A7B	2-1/2	2-3/4	2-1/2	2-3/4	2-1/2	2-3/4	1-1/8	45	1-1/4	45	.340	.008H	.010H	.011	6B	.....	.018	.025	TC	.....	Au	A	2-1/2	1-1/4	6	24	N1to+1	0 to +1	0-1/2	4 1/4-6	16
LH G	155x AL-A7B	2-1/2	2-3/4	2-1/2	2-3/4	2-1/2	2-3/4	1-1/8	45	1-1/4	45	.340	.008H	.010H	.011	6B	.....	.018	.025	TC	.....	Au	A	2-1/2	1-1/4	6	24	N1to+1	0 to +1	0-1/2	4 1/4-6	17
HM R	90 AL-A5	2-1/2	1-3/4	2-1/2	1-3/4	2-1/2	1-3/4	1-1/4	45	1-1/4	45	.312	.006C	.007C	.006	20B	5 1/2 B	.020	.025	3B	1B	.....	A	1-1/2	3 1/2	2	.....	6-11	2	1-1/4	6 1/2	18
LH G	145x AL-A7B	2-1/2	2-3/4	2-1/2	2-3/4	2-1/2	2-3/4	1-1/8	45	1-1/4	45	.340	.008H	.010H	.014	12B	.....	.020	.025	2B	.....	Au	A	2-1/2	1-1/4	5	17	N1to+1	0 to +1	0-1/2	4 1/4-6	19
LH G	140x AL-A7B	2-1/2	2-3/4	2-1/2	2-3/4	2-1/2	2-3/4	1-1/8	45	1-1/4	45	.340	.008H	.008H	.011	6A	2 1/2 A	.020	.025	TC	TC	Au	A	2-1/2	1	5	15	N1to+1	0 to +1	0-1/2	4 1/4-6	20
LH G	105 Ch-H-10	2-3/4	1-3/4	2-3/4	1-3/4	2-3/4	1-3/4	1-1/8	45	1-1/4	45	.279	.011C	.011C	.013	9 1/2 B	3 1/4 B	.015	.025	4B	1 1/2 B	Au	A	1.70	1.41	4	13	4 1/2-9	1/4-1	1-1/4	8	21
LH G	100 Ch-H-10	2-3/4	1-3/4	2-3/4	1-3/4	2-3/4	1-3/4	1-1/8	45	1-1/4	45	.310	.011C	.011C	.013	TC	TC	.015	.025	4B	1 1/2 B	Au	A	2	1.75	5	22	4 1/2-9	1/4-1	1-1/4	8	22
OH R	120 Ch-H-10	2-3/4	2-3/4	2-3/4	2-3/4	2-3/4	2-3/4	1-1/8	30	1-1/4	45	.341	.010H	.010H	.012	8 1/2 B	.....	.018	.025	TC	TC	Au	A	2-1/2	1-1/4	5	14	3-4	1	1-1/4	7 1/2	23
OH R	130 Ch-H-10	2-3/4	2-3/4	2-3/4	2-3/4	2-3/4	2-3/4	1-1/8	30	1-1/4	45	.341	.010H	.010H	.012	8 1/2 B	.....	.018	.025	4 1/2 A	.....	Au	A	2-1/2	1-1/4	5	15	3-4	1	1-1/4	7 1/2	24
BH G	125 Ch-J-8-A	2-3/4	2(d)	2-3/4	2(d)	2-3/4	2(d)	1-1/4	45	1-1/4	45	.341	.006H	.008H	.....	10 1/2 B	.....	.020	.032	TC	.....	Au	A	1-1/2	1-1/4	6	13	0-1/4	1-1/4	1-1/4	3° 38'	25
BH G	120 Ch-J-8-A	2-3/4	2(d)	2-3/4	2(d)	2-3/4	2(d)	1-1/4	45	1-1/4	45	.341	.006H	.008H	.....	10 1/2 B	.....	.020	.032	TC	.....	Au	A	1-1/2	1-1/4	6	13	0-1/4	1-1/4	1-1/4	3° 38'	26
BH G	119 Ch-J-8-A	2-3/4	2(d)	2-3/4	2(d)	2-3/4	2(d)	1-1/4	45	1-1/4	45	.343	.006H	.008H	.....	10 1/2 B	.....	.017	.032	TC	.....	Au	A	1-1/2	1-1/4	9	18	0-1/4	1-1/4	1-1/4	3° 38'	27
OH G	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	28
BH S	155x AC-104	2(c)	2-3/4	2-3/4	1-3/8	2-3/4	1-3/8	1-1/8	45	1-3/4	45	.341	AA	AA	AA	TC	TC	.015	.027	5B	2 1/2 B	Au	A	2 1/2	2-1/4	7	25	(nn)	0-1/4	1-1/4	5° 6'	29
OM O	105 Ch-7	2-1/2	2-3/4	2-1/2	2-3/4	2-1/2	2-3/4	1-1/8	45	1-1/4	45	.311	AA	AA	AA	21B	6 1/2 B	.020	.029	7B	2 1/2 B	Au	B	2 1/2	2	12	32	1	1-1/4	7 1/2	30	
OM O	110 Ch-H-10	2-3/4	1-3/4	2-3/4	1-3/4	2-3/4	1-3/4	1-1/8	45	1-1/4	45	.311	AA	AA	AA	21B	6 1/2 B	.015	.029	4B	1 1/2 B	Au	A	2 1/2	1.75	5	27	3-5	1-1/4	3 1/4-4	31	
BH G	100 Ch-H-10	2-3/4	1-3/4	2-3/4	1-3/4	2-3/4	1-3/4	1-1/8	45	1-1/4	45	.310	.011C	.011C	.013	TC	TC	.015	.025	4B	1 1/2 B	Au	A	2.14	1.75	5	22	4 1/2-9	1/4-1	1-1/4	8	32
BH G	110 AL-B7-A	2-1/2	2-3/4	2-1/2	2-3/4	2-1/2	2-3/4	1-1/8	45	1-1/4	45	.340	.015	.015	.015	21 1/2 B	6B	.020	.025	TC	TC	Au	A	2	1.42	6	19	0-N 1/2	1/4-3/4	1-1/4	4 1/2	33
BH G	125 AC-45	2-1/2	2-3/4	2-1/2	2-3/4	2-1/2	2-3/4	1-1/4	45	1-1/4	45	.372	.015	.015H	.015	24 1/2 B	7B	.020	.025	6B	1/2 B	Au	A	2	1.42	6	16	0-N 1/2	1/4-3/4	1-1/4	4 1/2	34
BH G	110 AC-45	2-1/2	2-3/4	2-1/2	2-3/4	2-1/2	2-3/4	1-1/4	45	1-1/4	45	.372	.015H	.015H	.015	20B	6B	.020	.025	9B	3/4 B	Au	B	2	1.24	7	17	0-N 1/2	1/4-3/4	1-1/4	4 1/2	35
BH S	146x AC-45	2-3/4	2-3/4	2-3/4	2-3/4	2-3/4	2-3/4	1-1/4	30	1-1/4	45	.310	.008H	.011H	.012	5B	2B	.020	.040	TC	TC	Au	A	2-1/2	1-1/4	5	17 1/2	0-N 3/4	N1to+1	1-1/4	4° 51'	36
BH S	146x AC-45	2-3/4	2-3/4	2-3/4	2-3/4	2-3/4	2-3/4	1-1/4	30	1-1/4	45	.310	.008H	.011H	.012	5B	2B	.020	.040	TC	TC											

Motor Car Price, Weight and Body Table

Following are delivered prices at factory for cars with standard equipment and include all federal taxes with exception of Croslley, Ford, Lincoln, Lincoln-Zephyr, Mercury and Willys. Optional equipment, state or local taxes, transportation charges and finance charges are extra.

BODY, MAKE AND MODEL		Delivered Price	Shipping Weight	BODY, MAKE AND MODEL		Delivered Price	Shipping Weight	BODY, MAKE AND MODEL		Delivered Price	Shipping Weight	BODY, MAKE AND MODEL		Delivered Price	Shipping Weight	BODY, MAKE AND MODEL		Delivered Price	Shipping Weight				
BANTAM				CHEVROLET				DODGE				HUDSON				NASH				PACKARD			
65				Master 85				Special D17				(Continued)				(Continued)				(Continued)			
Std. Coupe, 2p.		399	1255	Bus. Coupe		659	2865	Coupe, 2p.		755	2867	Country Club		Sedan, trk., 4d.		985	3385	Model 1808		2688		4585	
Master Cou., 2p.		449	1275	Twn.Sed., 2d., 5p.		699	2915	Sedan, 2d., 5p.		815	2942	6-43		A. P. Cabriolet.		1085	3410	Tour. Limousine.		2554		4510	
Wast. Road., 2p.		449	1200	Sport Sed., 4d., 5p.		740	2930	Sedan, 4d., 5p.		855	2997	Sedan, 4d., 6p.		1018	3240			Tour. Sedan					
Pickup Truck		475	1280	Stat.Wag., 4d., 8p.		903	3105					Sedan, 4d., 8p.		1230				Rollson A. W.					
Panel Truck		489	1350					De Luxe D14										Town Car*		4599		4175	
Conv. Coupe, 2p.		525	1275	Master				Coupe, 2p.		803	2905	Eight-44						*F.O.B. New York City					
Conv. Sed., 4p., 2d.		549	1295	De Luxe				Coupe, 2-4p.		855	2973	Coupe, 3p.		860	3040								
Stat.Wag., 4p., 2d.		575	1400	Bus.Cou., 2d., 2p.		684	2920	Conv. Coupe, 5p.		1030	3190	Sedan, 2d., 6p.		918	3140								
				Coupe, 2d., 4p.		715	2925	Sedan, 2d., 5p.		860	2990	Vict. Coupe, 5p.		942	3075								
				Twn.Sed., 2d., 5p.		725	2965	Sedan, 4d., 5p.		905	3028	Sedan, 4d., 6p.		952	3185								
				Spt. Sed., 4d., 5p.		766	2990	Sedan, 4d., 7p.		1095	3460	Conv. Coupe, 5p.		1087	3065								
								Limousine, 7p.		1170		Conv. Sed. 2d., 6p.		1122	3130								
BUICK				CHRYSLER				FORD				LA SALLE				OLDSMOBILE				PONTIAC			
Special 40-40				De Luxe				V8-60				Country Club				Six—Series 60							
Bus. Coupe		895	3505	Bus.Cou., 2d., 2p.		720	2930	Bus. Coupe		620	2519	8-47		1118	3285	Bus. Coupe, 3p.		807	3030	De Luxe		729	2804
Sport Coupe		950	3540	Coupe, 2d., 4p.		750	2945	Coupe		600	2519	Sedan, 4d., 6p.		1118	3285	Club Coupe, 3-6p.		848	3019	Coupe			
Tour.Sed., 2d., 5p.		955	3605	Twn. Sed., 2d., 5p.		761	2980	Tudor Sedan.		640	2659	Sedan, 4d., 8p.		1330		Sedan, 2d., 6p.		853	3065	Coupe, 4p.		774	2849
Tour.Sed., 4d., 5p.		996	3680	Sport Sed., 4d., 5p.		802	3010	Fordor Sedan.		685	2696					Sedan, 4d., 6p.		899	3100	Conv. Cou., 2-4p.		954	3049
Conv. C., 2d., 6p.		1077	3685	Cabriolet, 2d., 4p.		873	2995	Stat. Wag.		850						Conv. Cou., 3-6p.		996	3110	Tour.S., 2d., 5p.		779	2869
C. Phae., 4d., 6p.		1355	3755	Stat.Wag., 4d., 8p.		934	3160									Station Wagon.				Tour.S., 4d., 5p.		809	2924
																				Sedan, 7p.		1009	3359
Super 40-50								V8-85												Sedan Lim., 7p.		1084	
Sport Coupe		1058	3735	CHRYSLER				Bus. Coupe		660	2763					Six—Series 70		865	3100	Stat. Wag., 8p.		974	3144
You.Sed., 4d., 6p.		1109	3790	Royal Six		901	3075	Coupe		640	2763					Bus. Coupe, 3p.		901	3105				
				Coupe, 3p.		966	3110	Tudor Sedan.		680	2909					Club Cou., 3-6p.		912	3170				
				Coupe, 5p.		966	3150	Fordor Sedan.		725	2936					Tour.Sed., 2d., 6p.		963	3220	PONTIAC			
				Vict. Sedan, 6p.		1001	3175	Stat. Wag.		850						Conv. Cou., 3-6p.		1045	3240	Special Six			
				Sedan, 8p.		1001	3175													40-25			
				Limousine, 8p.		1241	3316	De Luxe												Bus. Coupe, 3p.		783	3055
						1316		V8-85												Sport Coupe, 3p.		819	3040
								Bus. Coupe		720	2831	LINCOLN								Tour. S., 2d., 6p.		830	3105
								Coupe		700	2791	V-12—136 in.								Tour. S., 4d., 6p.		878	3135
								Coupe, 3p.		700	2791	Sedan, 5p., 2w.								Station Wagon.		1015	
								Coupe, 5p.		740	2964	Sedan, 5p., 2w.											
								Tudor Sedan.		740	2964	Conv. Road.LeB.								De Luxe Six			
								Fordor Sedan.		785	2966	Coupe, LeB.								40-26			
								Conv. Club Cou.		825	2956	Brunn Cou. Vict.								Bus. Coupe, 3p.		889	3105
								Stat. Wag.		920	3262	Wilby. Coupe, 5p								Tour. S., 2d., 6p.		881	3165
																				Tour. S., 4d., 6p.		932	3200
																				Sport Coupe, 6p.		876	3105
																				Cabriolet, 6p.		1008	3195

Don't make any deal for any
1941 line until you see the

New 1941 Studebakers

with new slip-stream bodies of advanced torpedo type

A bigger, longer, wider, roomier new
STUDEBAKER CHAMPION
IN THE LOWEST PRICE FIELD

A distinctive, new, super-economical
**STUDEBAKER
COMMANDER SIX**

A richly finished, luxury-laden new
**STUDEBAKER
PRESIDENT EIGHT**

**GO PLACES
WITH
STUDEBAKER
IN 1941**

Good Studebaker territory is available to successful distributors and dealers. For information address Paul G. Hoffman, President, The Studebaker Corporation, South Bend, Indiana

PROFIT MAKERS

PARTS • EQUIPMENT • TOOLS • ACCESSORIES

S-K Red Tool Wagon

The S-K Red Tool Wagon is one of the new items offered to the trade by The Sherman-Klove Co., 3535 West 47th St., Chicago, Ill. It contains 112 tools including sockets, ratchets, extensions, universal joint sockets and box-end wrenches in $\frac{1}{4}$ in., $\frac{3}{8}$ in., $\frac{1}{2}$ in. and $\frac{3}{4}$ in. square drives. The Wagon has two drawers and two tote trays, with ample space for stor-



ing body tools, drills and other large pieces of equipment. The cabinet is finished in red and black wrinkle finish and is mounted on $2\frac{1}{2}$ -in. composition casters. Price complete \$155.00; shipping weight 189 lbs.

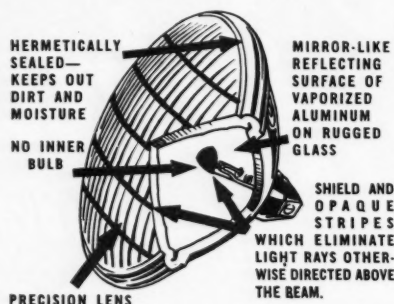
Makes Penetrating Oil

Announcement has been received from the Curran Corp., Malden, Mass., that their new product, Motor Fizik, makes a very effective penetrating oil when mixed in proportions of one gallon of Motor Fizik to two gallons of No. 1 light fuel oil. Accordingly, it will be packaged in a new lithographed gallon can to be known as the "penetrating oil gallon."

GE Has New Fog Light

A companion to the driving and passing lights recently announced by the Lamp Division of General Electric Co., Nela Park, Cleveland, Ohio, is the new G-E Mazda Foz Lamp No. 4012. Like the driving and passing lights, the new fog light is of the all-glass sealed beam type of construc-

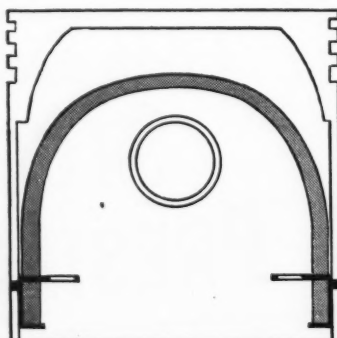
tion, but differs from the others in that a small black hood is mounted



immediately in front of the filament and is designed to intercept "wild" rays which would otherwise escape forward directly from the filament. Opaquing of the horizontal prismatic joints of the lens also reduces to a minimum the scattering of rays above the fog lamp's main beam. The new fog light, with a clear lens, carries a list price of \$1.10; with an amber lens the price is \$1.35.

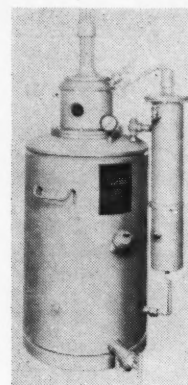
Wel-Ever Announces Piston Skirt Expander

A new piston skirt expander having pressure pads for distributing the pressure over a large area of the piston skirt has been announced by The Wel-Ever Piston Ring Co., Toledo, Ohio. This feature is said to overcome the piston breakage hazard when installing expanders in thin-



wall pistons. Known as the U-Flex expander, it is claimed to be available for all kinds of pistons. A special tool makes installation simple and is furnished with sets of these expanders. Templet for use in drilling holes to anchor expander is also included in sets.

Marquette Announces Acetylene Welder



The Marquette Mfg. Co., 409 N. E. Johnson St., Minneapolis, Minn., announces the marketing of four new portable acetylene generators. Ranging in carbide capacity from 12 to 50 pounds, these four models offer a size and price to fit the needs of all welding shops.

It is said that these generators will deliver gas at a cost not exceeding $1\frac{1}{4}$ cents per cubic foot. A small observation window permits one to observe the quantity of carbide remaining in the hopper so that there need be no danger of the operator running out of gas in the middle of an important welding operation.

Flexible Tubing and Fittings Assortment



A new line of Neoprene flexible tubing and detachable fittings, especially made for making up flexible lines for oil filters and gas, oil, grease and vacuum

lines, has been announced by The Imperial Brass Mfg. Co., 1200 W. Harrison Street, Chicago, Ill. A convenient kit containing both tubing and fittings is being offered, cataloged as No. 115-FN, priced to dealers at \$7.85.

Black & Decker Offers New Tapgun

With the introduction of the Tapgun to the line, Black & Decker, Towson, Md., now has three powerful, one-handed high speed production tools of identical grip, build and balance—the Holgun, Tapgun and Scrugun. The new Tapgun weighs only $3\frac{3}{4}$ lb., measures $9\frac{1}{4}$ in. overall, taps up to 5-16 in. in cast iron, 3-16 in. in steel, and $\frac{3}{8}$ in. in brass or aluminum. It taps at 400 r.p.m. and backs out at 525 r.p.m.



*Insurance against
high
operating
costs!*

LYNITE^{*}
T-SLOT **LO-EX** **PISTONS**

REG. U.S. PAT. OFF.

Both you and the car owner profit when you install Lynite T-Slot LO-EX Pistons.

These pistons have low coefficient of expansion, permit close clearances, provide maximum heat flow. Their light weight reduces bearing pressures, so bearings last longer. Oil and fuel consumption, and carbon formation, are less. ALUMINUM

COMPANY OF AMERICA, 2133 Gulf Building, Pittsburgh, Pa.

* REG. T. M., ALUMINUM COMPANY OF AMERICA



LYNITE LO-EX PISTONS — A PRODUCT OF
ALCOA · ALUMINUM
CAST ONLY BY ALUMINUM COMPANY OF AMERICA

PROFIT MAKERS

PARTS • EQUIPMENT • TOOLS • ACCESSORIES

Window Regulator Repair Kit Offered

One of the newest additions to the line of time-saving items made by Champ Items, Inc., 6191 Maple Avenue, St. Louis, Mo., is the No. 994 window regulator repair kit assortment consisting of 12 kits of repair



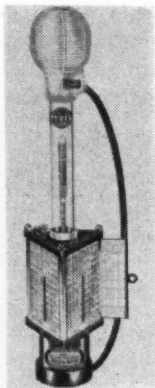
window lifts on Ford, General Motors and Chrysler cars. Each kit contains all necessary parts and instructions to repair the old regulator.

Heater Hose Program

Thermoid Co., Trenton, N. J., has announced a new car heater hose program to help dealers prepare for the fall and winter car heater hose replacement market. Four different types of Thermoid car heater hose are included in the program so that dealers can meet the demands of all types of customers. In addition, an attractive merchandising and advertising program is featured.

Freez-D-Tector

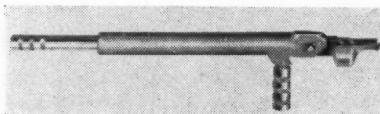
E. Edelmann & Co., 2332 Logan Blvd., Chicago, Ill., has announced a new radiator solution tester known as the Self-Calculating Freez-D-Tector. It will test solutions using alcohol, methanol, Zerone and Zerex, Trek, and Prestone, according to the manufacturer, and not only calculates the freeze temperature but also has a capacity corrector on a roller which lists the amount of anti-freeze



to be added to attain protection to any given temperature. The instrument uses a jar of Pyrex glass tubing, a double diameter float with easy-to-read figures, and is equipped with a flashlight built in to make it easy to use the instrument at night. List price is \$10, dealer's price \$4.95, and a special introductory offer of \$3.95 with your old tester.

Valve Tool With Hastings Ring Deal

A Speed-King valve tool, said to be fast in the removal of valve assemblies from Ford V-8, Mercury and Lincoln-Zephyr motors, has been made available by the Hastings Mfg. Co., Hastings, Mich. This new time-sav-



ing tool is supplied without cost with the purchase of a popular \$50 assortment of Hastings Steel-Vent piston ring sets and piston expanders.

Sealed Beam Headlight Replacement Unit

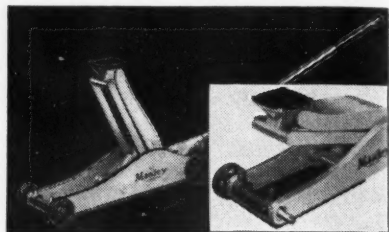


The sealed beam headlamp replacement unit introduced by the Do-Ray Lamp Co., 1458 S. Michigan Avenue, Chicago, Ill., is designed to be installed in place of the old style headlamp. It is only necessary to remove the old headlamp housing and replace it with the new No. 1008. It is built of heavy materials for use on all trucks, passenger cars or buses with ball mounted headlights. Uses a double filament sealed beam lighting unit.

Knee Action Jack

To eliminate the trouble caused by jack wheels sinking into the asphalt when a load is lifted during the warm summer months, the Manley Mfg.

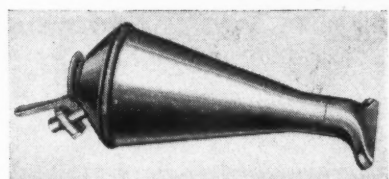
Division of American Chain & Cable Co., Inc., York, Pa., has developed a special jack. This jack rolls freely on



four wheels without a load, but when a load is lifted the wheels retract, allowing the load to be supported entirely on a flat steel plate which is attached to the bottom of the jack. When the load is released, the wheels spring back into place so the jack can be rolled away. It is a hydraulic jack of 2-ton capacity.

Vacuum Cleaner Works From the Air Line

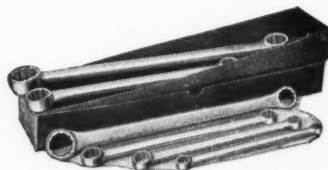
A new vacuum cleaner designed to operate from the regular compressed air line has been developed for automotive shops by the Roosevelt-Douglas



Mfg. Co., Louisville, Ky. The unit is constructed entirely of aluminum, making it light in weight, and has no moving parts. It is intended primarily for cleaning automobile interiors. List price \$16.50.

Time-Saver Wrenches

J. H. Williams & Co., 225 Lafayette Street, New York City, has increased the "Superwrenches" sets recently announced by adding two new sets, No. 8006 and 7006. These sets are designed especially for work on main bearings, base, cylinder heads, spring clips and connecting rods.



Set "8006" contains six double offset "Superwrenches" with thin head walls; "7006" contains six 15 deg. angle offset wrenches with extra length for unusual reach and leverage. The wrenches of both sets have different 12-point openings in each head.



Unlike tires,
WORN BRAKE LINING
CAN'T BE SEEN

A worn tire can be seen, but the motorist cannot see dangerously worn brake lining, unless a wheel is pulled.

Raybestos is making that vital safety reminder in 64 million advertisements in Saturday Evening Post, Life, Collier's and Country Gentleman.

More than ever, car owners right in your community are ready to let you pull a wheel every 2,500 miles . . . uncovering many re-lines, parts replacements, etc., for you.

Make this extra business yours. Feature Raybestos brake service. Raybestos offers a complete tie-in plan. Ask your distributor.

THE RAYBESTOS DIVISION of Raybestos-Manhattan, Inc.
BRIDGEPORT, CONN.

Brake Lining, Clutch Facings, Fan Belts, Hose • For Cars, Trucks, and Buses.



Raybestos

"YOUR 2 BEST FRIENDS for HIGHWAY SAFETY"

DO IT RIGHT THE FIRST TIME

By ROSE LU GOLDMAN

MUCH is being done these days to sell the motoring public on the soundness of Preventive Service. The idea that real economy begins when the car is properly and regularly serviced, definitely favors the great mass of shops and service departments. With American car owners conscious of the value of preventive service, there will undoubtedly be increased

demand for more and different types of service.

Naturally, it is important that the service trade follow through on this business promotion, and carry on the work of cultivating preventive service business. One way to hold business, and to increase business is to *do the job right the first time.*

When a car comes in for service,

friendly and profitable customer-relations requires that you do the job exactly as the buyer expects you to do it; that deliveries be made as promised, and that the car is kept clean and orderly.

Doing the job right the first time not only pleases your customers and enhances your chances for more business, it also eliminates the disagreeable task of having to face a displeased car owner, and having to make good on the job at your own expense.

It's difficult to avoid complaints and there are times when the customer isn't always right—but the smart operator works vigilantly to avoid customer displeasure, knowing full well that it pays in the long run. Here are a few examples of what happens, don't let them happen in your shop.

Last spring, Mr. and Mrs. Jones were on a trip. Arriving in a large mid-western city they took the car into a factory branch service station for lubrication, general tightening, and a repair to the radio. The car was promised them for 11:00 that morning.

Mr. and Mrs. Jones were delayed in calling for the car and didn't reach the service station until 2:00 P. M. at which time the work hadn't even been started. At 3:00 P. M. the car was brought downstairs without having been lubricated, without having been tightened, and without the radio which had been removed a few minutes before and sent to a radio repair man a few blocks away.

There's no need to draw out the gruesome details. Mr. and Mrs. Jones left that city, not at noon as they had planned, but at 5:15 P. M. The car still needed lubrication and tightening and the radio still didn't work because at 4:45 the radio man had announced with regret that he didn't have a necessary part and it was now too late in the day to get one.

Then there's the case of Mrs. Brown and Mrs. Wilson—two business women who live together and own a car together. There was the time they left the car in the service station eight full hours to have two rattles taken out of the doors, and the brakes equalized. They called for the car in the evening and before they had gone fifteen miles, the brakes (adjusted too tightly) had gotten hot enough to melt a rivet. The man who remedied this situation again left the brakes pulling badly—this time to the left. Before they reached home both rattles had returned to the doors and all they had to show for \$4.50 was a receipted bill and a good dose of disgust.

Another lady we happen to know took a car in to have a faulty door lock replaced. The mechanic who did

(Continued on page 126)

HERE'S your Replacement for front-wheel Bearings!

Here's a type of roller bearing that users tell us fills a long-felt want—that more than answers the requirements of front wheel service.

Here's a type of construction (Perfect-Aligning, Concave Rollers, Convex Outer Race) that is ideally suited to the tough service your car or truck is subjected to.

Here's a bearing, built and backed by Link-Belt—makers of the famous Link-Belt Silverstreak Silent Timing Chain—that wholesalers everywhere are selling with the most satisfactory results.

Consult your wholesaler! Stocks everywhere. Give this famous Link-Belt Shafer Roller Bearing a trial and convince yourself. Act now!

And, we furnish roller bearings for rear axles and differentials, too!

LINK-BELT COMPANY

519 N. Holmes Ave., Indianapolis, Ind. Warehouses in all principal trading centers



All inner bearings are furnished with GREASE SEAL. Wrapped in oil-paper and packed in individual cartons.

8234

LINK-BELT

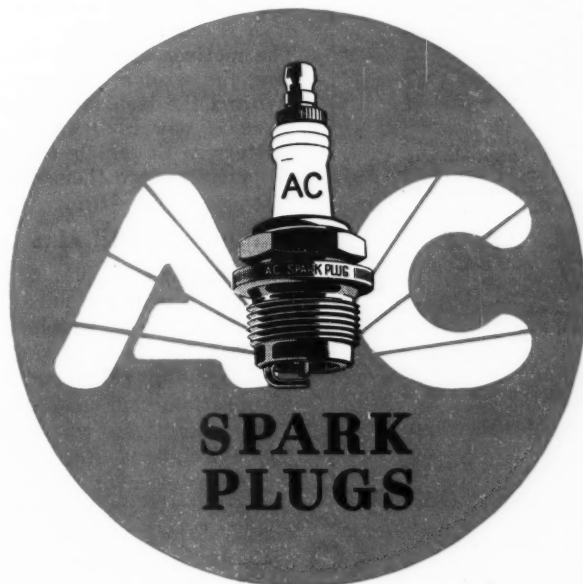
SHAFER

ROLLER BEARINGS

*To Sell Plugs— The **BEST TIME** is*

when customers leave their cars
for service of any kind

*The **BEST WAY** is*



For 31 Years THE QUALITY SPARK PLUG

Buick, Cadillac, Chevrolet, LaSalle, Nash, Oldsmobile, and Pontiac motor cars; Chevrolet, Diamond-T, Federal, GMC, International, and White Trucks; Allis-Chalmers, J. I. Case, Cletrac and International Harvester Tractors —these are some of the well-known cars, trucks, and tractors which use AC Quality Spark Plugs. *It pays to stock and sell the plugs that dominate in equipment and demand.*

THE AC WAY



DISPLAY
this Nationally Advertised
SIGN



**CLEAN
and REGAP**
plugs at
5c EACH



SELL
2 New Plugs
*for every 6 cleaned**
*National Average



**Suggest
CLEANING**
*to every customer
who leaves his car*

AC SPARK PLUG DIVISION • General Motors Corporation • FLINT, MICHIGAN

LEGALLY SPEAKING

by C. R. ROSENBERG, JR.

A lawyer's interpretation of Federal and local court decisions of interest to repairmen, presented each month

Ordinance Against Peddling

A COLORADO city passed an ordinance prohibiting the soliciting of retail business in private residences without the request or invitation of the

householders. A solicitor for a corporation located in another state was convicted of violating the ordinance and appealed to the Supreme Court of Colorado.

One of the contentions against the

legality of the ordinance was that since the convicted solicitor represented a corporation in another state, he was engaged in interstate commerce and that the city could not enforce an ordinance whose effect was to interfere with interstate commerce. To this argument the Supreme Court of Colorado said:

"Inasmuch as the ordinance applies equally to all solicitors and does not discriminate against those who are soliciting the sale of goods for corporations in other states, such effect as it may have on interstate commerce is purely incidental to the operation of a police power regulation and does not constitute a regulation of or interference with interstate commerce within clause 3, section eight, Article 1 of the Federal Constitution, giving the Federal Government exclusive power to regulate commerce among the several states. None of the cases in which similar ordinances have been under consideration has held them to be invalid on the ground that they interfered with or were a burden on interstate commerce."

The convicted solicitor contended, too, that "the motive in passing the ordinance was to protect local business from the competition of non-tax-paying peddlers and solicitors."

To that argument the court replied, "So what?" in these dignified words:

"Courts are concerned with the existence or non-existence of the power of a legislative body to pass a law. The motives that actuate the legislators, the wisdom or unwisdom of the law and the incidental effects of it, if there is power to enact it, are not matters with which the courts may properly concern themselves."

Employer Still Has Authority

AN employe, besides being a member of a union, must also do his job and follow his employer's instructions. Labor laws have not deprived the employer of his right to dismiss an unsatisfactory employe.

In a recent case where the National Labor Relations Board was seeking the reinstatement of certain discharged employes, with back pay, the United States Circuit Court of Appeals for the Seventh Circuit said:

"The law does not interfere with the normal right of the employer to select his employes or discharge them. Interference with the right of an employer to determine when an employe is inefficient should not be lightly indulged. The evidence is clear in this case that the first employe was discharged for refusing to obey instructions, the second for violating the rule prohibiting smoking during working hours, and the third for inefficiency and causing disturbances at the plant."

Accordingly, the court refused to require the employer to reinstate the employes in question.

HEAT HERE + HEAT THERE



No more cold feet in the back seat. Here's the heater motorists have long dreamed about and hoped for.

Model FR-70
UNDER-SEAT MODEL

The front seat also gets more heat, more uniformly distributed than by any other method yet conceived. You can prove it!

It's the Sensation of the
1940 HaDees LINE

Do your heater sales need a "shot in the arm?" Do you want a number that, because of its novelty, sells right through the warm weather? Then hook up with HaDees and feature the new *under-seat* models. Here HaDees offers hot water heat at its best. Here is more heat, faster and better distributed than ever. Add to these sensations 5 new and fast selling dash models plus a line of active accessories and you really have something. Yes, sir, here is a honey of a money-making proposition. Write for details *today*.

LIBERTY FOUNDRIES CO. • ROCKFORD, ILL.
Division of Burd Piston Ring Co.

Look to **HaDees**

FOR THE LATEST IN FULL-CAR COMFORT



3 Backed by a wealth of dealer aids! "Go-getter" point-of-sale helps will add power to this impact, remind motorists that you have "Prestone" brand anti-freeze to sell! Everything you need is in this kit of money-makers...a colorful banner, bright display cards, booklets, newspaper mats for your use, etc. "There's nothing else like it" for creating sales for you!

UCC

NATIONAL CARBON COMPANY, INC.

Unit of Union Carbide and Carbon Corporation

General Offices: New York, N. Y.

Branches: Chicago and San Francisco

The words "Prestone" and "Eveready" are registered trade-marks of National Carbon Company, Inc.

ANTI-FREEZE

BRAND OF ANTI-FREEZE EVER MADE!

TAKE ADVANTAGE OF THIS FREE *Pre-Season Offer!*

Here's the finest "Prestone" anti-freeze display stand that could be imagined! Sturdy, all-metal, made in one piece, it is exactly what many dealers have requested. It holds 18 gallon cans of "Prestone" anti-freeze and helps you sell this famous product. After the anti-freeze season, you can use it to display other merchandise or to hold any number of small tools or spare parts. This stand, and a full kit of "Prestone" anti-freeze dealer helps, will be sent—ABSOLUTELY FREE—to all dealers who order a minimum of 24 gallons of "Prestone" anti-freeze and take delivery before November 1, 1940. Don't miss it! Place that order today!



SHOP EQUIPMENT

(Continued from page 29)

Equipment found in the department includes a motor analyzer, combustion analyzer, alinement equipment for frame and front end work, arc welder, headlight tester, jacks and master mechanic wrench chests, lathes, valve seat grinder, valve refacer, in fact about everything a dealer could want except a dynamometer and that will be installed shortly,

according to R. J. Sherart, service manager. Two gasoline pumps are located at the front of the plant.

In keeping with the cleanliness and neatness of the department is the lighting arrangement which includes skylights as well as adequate drop lamps with special reflectors, and flood lights for the lubrication section back-panel and a special wall installation

where the fittings and tools are kept. Heat is provided by a gas furnace with both floor radiators and overhead radiators with blower fans. The rest rooms are easily available at the front of the department, and Sherart makes it a special point to keep them clean and attractive.

"Our business has increased both in volume and profits a conservative 50 per cent as a result of service department modernization," stated the service manager. "It also has been instrumental in increasing both new and used car sales. People seem to have more confidence in a place that is up-to-date in equipment and maintains an alert and courteous personnel. We never have to depend upon price appeal for our volume, and our business has been built up and maintained without once cutting prices or underpaying the help. Of course, we offer seasonal service specials just as all dealers do, but we always charge a fair price for such group operations."

The department employs nine men including Sherart, and all are experienced mechanics or service men, well paid and having a definite following of satisfied customers. The company has gained such a large following in the Rawlins community that the service department will show a profit just on local trade alone, according to the service manager, although the transient business helps materially to boost that profit.

"We are able to personally contact most of our customers and prospects, and this has been found to be the most effective way of getting business here," Sherart said. "In fact, our personnel is selected on a personality as well as an experience and mechanical ability basis."

"From time to time we send factory prepared literature on service operations to our list of customers, particularly those driving the cars we sell," he continued, "and we advertise our seasonal service operations specials in the local paper."

The form of advertising the company considers best for the service department is roadside signs, according to Sherart. These have been placed on the transcontinental highway for more than 100 miles in each direction. One hundred new small roadside signs were put up this season. They draw attention to the various services including lubrication and motor and body repair work, along with 24-hour service and wrecker and tow-in service. A late model wrecker is kept on the job all day and all night. The roadside advertising has been effective in bringing in transient business, the service manager said.

Proprietor P. J. Skinner and Sherart believe in cashing in on the eye-appeal of modern equipment. They let their community know that they have new, efficient machines to facilitate service operations and insure better work on customers' cars.

THERE IS SOMETHING NEW IN TIRE CHAIN RETAILING!



by

Pyrene

Now a great new selling factor is made available to Pyrene chain dealers. Detailed, monthly weather forecasts, accurately predicting storms 30 days ahead plus flash warnings a few days in advance of local storms will be sent to Pyrene dealers from October to April. Now you can tell your customers with confidence, "Big snow storm coming next week. Get chains now." Streamers, Wall Chart, Weather Forecast Display, Folders—all are free. Get the complete story from your jobber or direct from Pyrene and do a better job of retailing on all winter accessories.

Pyrene tire chains have product-advantages not found in any other line: Cross chains rust-proofed into the metal. Side chains with a glistening silvery finish. Case-hardened and electric-welded links. The surest, easiest-to-work lock that's made. Complete in sizes, styles, and price range.



Pyrene weather forecasts are supplied by the Krick Industrial Weather Service, headed by Dr. Irving P. Krick of California Institute of Technology, depended on by air lines, movie studios, and sports promoters.



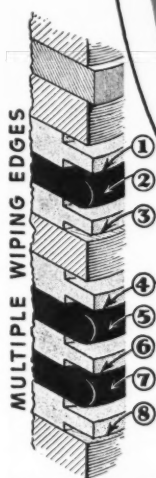
Pyrene Manufacturing Company

NEWARK NEW JERSEY

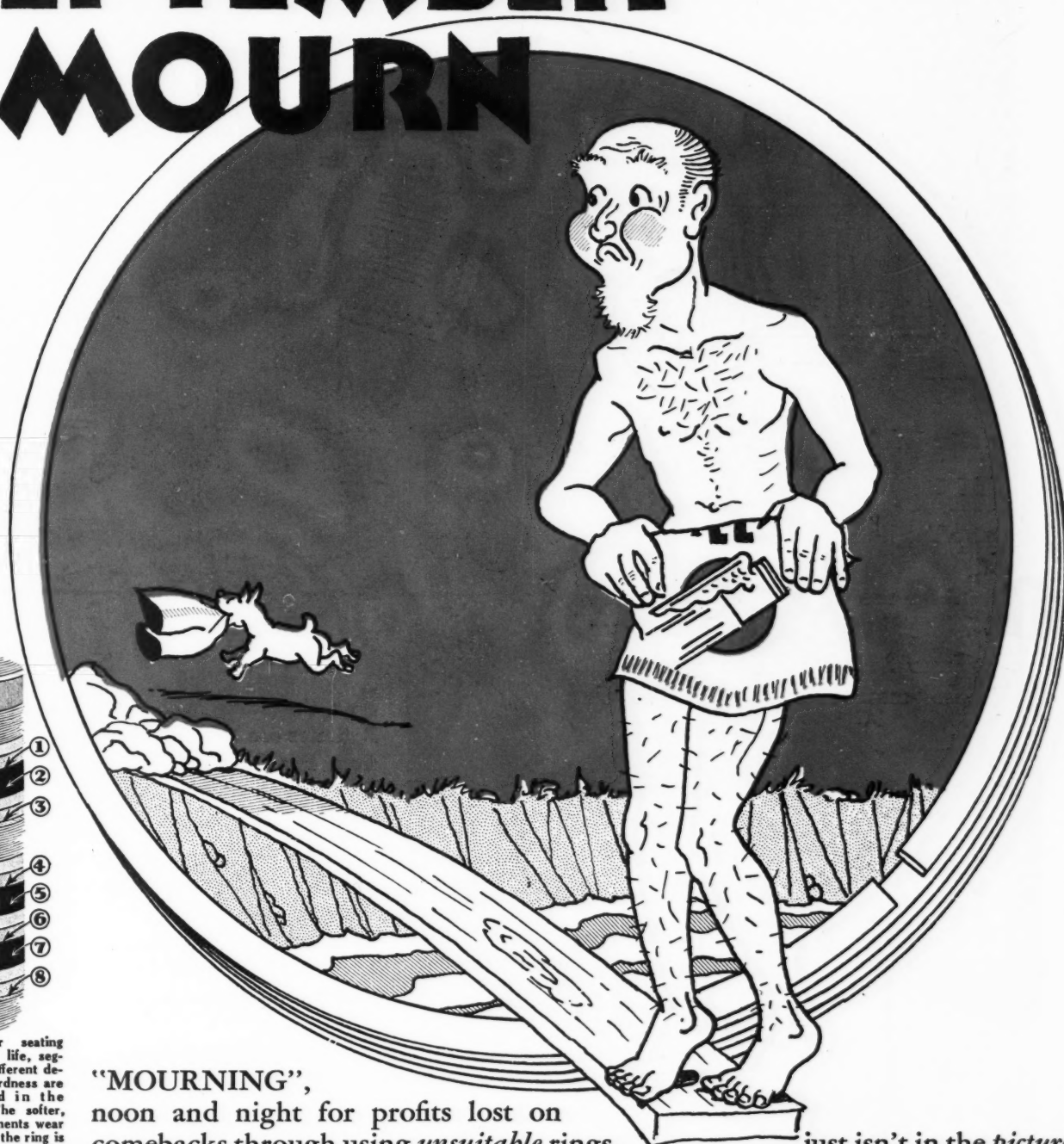
ATLANTA
KANSAS CITY

CHICAGO
SAN FRANCISCO

SEPTEMBER MOURN



For quicker seating and longer life, segments of different degrees of hardness are alternated in the groove. The softer, deeper segments wear down while the ring is seating, protecting the cylinder wall. The tougher, hardened sections carry-on after the seating, for long life.



"MOURNING",
noon and night for profits lost on
comebacks through using *unsuitable* rings, just isn't in the *picture*
when you use Simplex "LL" Rings. You can't *lose your shirt* when you give
them "LL" because the Simplex distributor stands the gaff—you get on-the-
piston service. The *naked* truth is exactly this: Simplex "LL" Rings are engineered to do a job—
and that job is to stop oil pumping, restore lost power and provide smooth, long-lasting performance—and
they certainly are doing it. Come on in!—the water's fine! Call your nearest Simplex distributor.

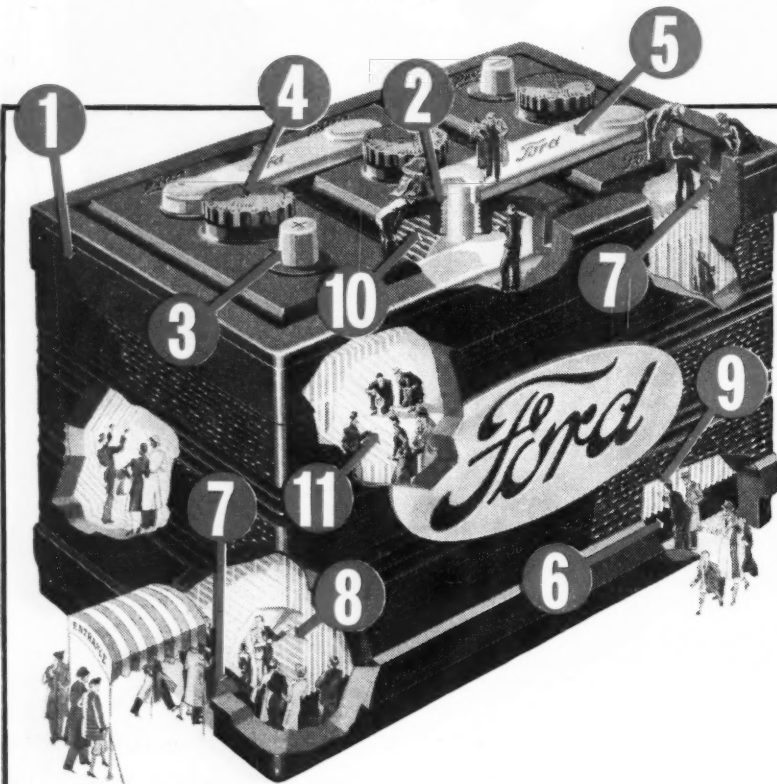
SIMPLEX PRODUCTS CORP., 3820 Kelley Ave., Cleveland, O.



SIMPLEX "LL" PISTON RINGS

Do a better job — give 'em "LL"!

a Pedigree Helps the Sale



It's the same with batteries. Ford Batteries are backed with a guarantee from Ford Motor Company. They're "pedigreed," and purchasers know they can depend on the Ford name.

Also—you have plenty of selling points to talk about when you sell Ford Batteries. When your customer asks why you recommend Ford Batteries, you don't need to hesitate. Tell him about these 14 important features:



1 Exceedingly durable battery case.

2 Lead inserts molded into cell covers.

3 Cell posts fused to lead inserts in covers. No leakage around cell posts.

4 "No-overflow" vent plugs in batteries for under-hood service.

5 Large cell connectors to minimize resistance.

6 Deep sediment chambers under cell groups.

7 Double support for cell groups.

8 Interlocking-type plate grids.

9 Specially compounded active materials in plates.

10 Only pure sulphuric acid used in electrolyte.

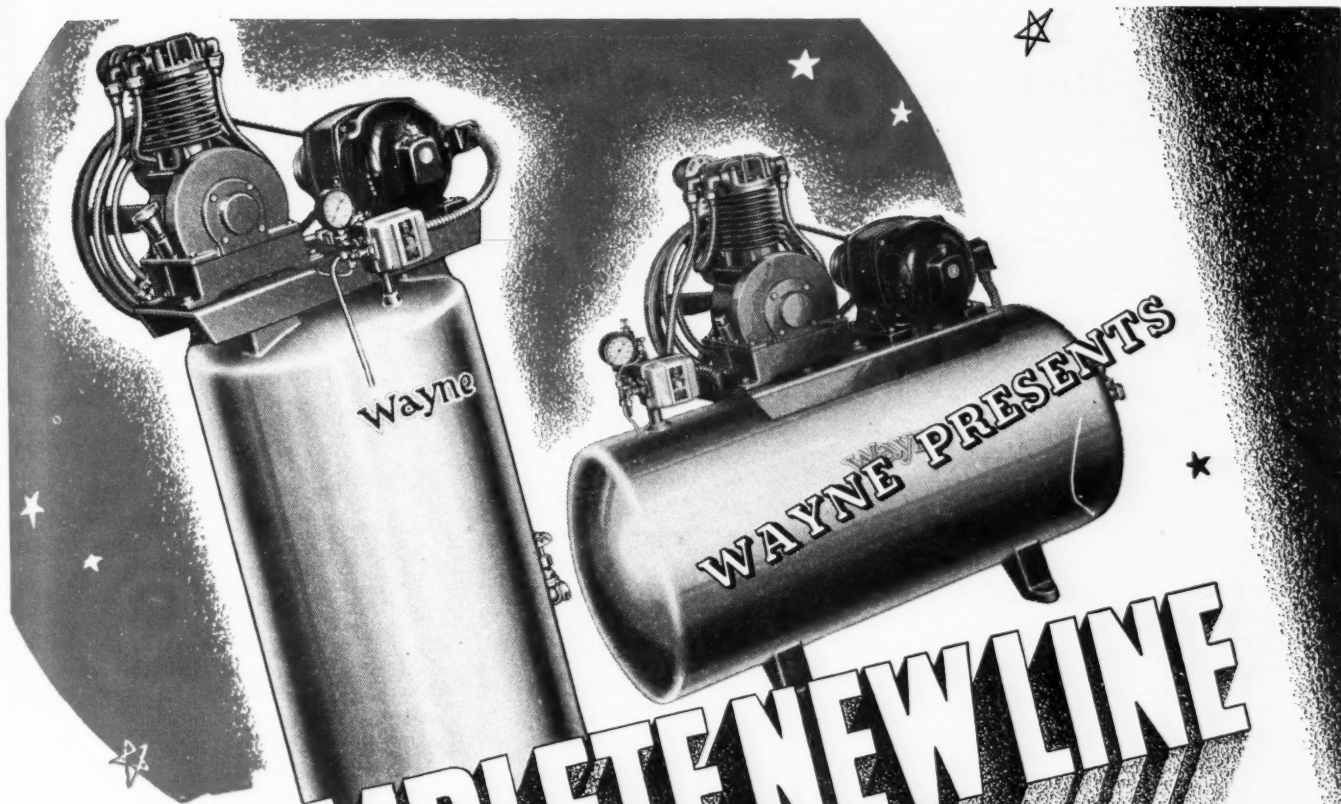
11 Battery separators of No. 1 grade "Port Orford" cedar.

12 "Proof tested."

13 Warranted in writing.

14 Suitable for many cars and trucks of various makes.

ORDER FROM YOUR *Ford* PARTS DISTRIBUTOR NOW
FORD MOTOR COMPANY • Service Department • DEARBORN, MICHIGAN



★ A COMPLETE NEW LINE

OF HIGH QUALITY - LOW PRICED - AIR COMPRESSORS
On the Easiest Payment Plan Ever Offered!

**THE ONLY LINE
 BACKED BY DIRECT
 FACTORY SERVICE!
 DESIGNED, BUILT AND
 SOLD ONLY BY WAYNE
 DIRECT FACTORY REPRESENTATIVES**

**YOUR WAYNE SALESMAN CAN HELP YOU
 SELECT THE RIGHT UNIT
 FOR YOUR NEEDS . . .**



To make it easy for you to replace old, worn-out, obsolete air compressors — Wayne has designed an entire new line of machines with higher capacities and higher efficiencies at lower prices and offers them on the same easy terms you enjoy on gasoline pumps. Now is the time to start. The saving in power cost alone will often carry the payments.

USERS WHO REPLACED WITH WAYNES SAY:
 "Saving 40% in power cost" — "Saving \$4.50 a month" — "Reduced our current bill \$6.00 a month." Everywhere the experience of Wayne owners is proving our claims. "Junk the Junkers" now — get a Wayne for safer, better operation at lower cost. Remember — it's the only compressor built that's backed by nation-wide direct factory service.



**WAYNES ARE SOLD ON
 TERMS AS LOW AS \$5.00
 DOWN, \$5.00 PER MONTH.**
MAIL COUPON NOW FOR BOOKLET

THE WAYNE PUMP COMPANY • FORT WAYNE, INDIANA
 Tell us more about the low priced new Wayne line and your easy terms.
 Also send your booklet of startling facts about Air Compressors.

NAME..... ADDRESS..... CITY..... STATE.....

Promoting Highway Safety Wins \$1000 For Dubois Serviceman in J-M Contest

Joseph H. Keefer, owner and manager of the Auto Aligning Co., Dubois, a city of about 13,000 in the northwestern section of Pennsylvania, has been awarded \$1,000 first prize in the Johns-Manville "Lend A Hand" National Contest for the best job of brake service dealers in promoting highway safety in their communities.

When Johns-Manville announced its Highway Safety Contest for J-M 4

Star Brake Lining dealers, in the early part of the year, Keefer seized the opportunity to put his safety ideas into practice. Recognition by his community and the \$1,000 prize were his rewards.

Starting with a well planned campaign of newspaper advertising and judicious publicity in the local papers, Keefer soon had his company known as headquarters for "Specialized

Safety Service" in his community.

With the advertising program Keefer made good use of his Johns-Manville Speed Check Analyzer in educating Dubois motorists. The Speed Check Analyzer is an electrically operated display developed by Johns-Manville engineers that translates miles per hour into feet per second—the "language of the traffic court"—and gives other data to help the service man impress his customers and the motoring public with the importance of precision in brake adjustment. This device was displayed in Mr. Keefer's shop, and for a period, in the downtown offices of the local newspaper.

Keefer arranged with the WPA Education Division to hold classes for new drivers in his shop. These classes are held once a month, attended by 20 to 35 people, to whom Mr. Keefer's son, Elwood, using an old sheet of metal for a blackboard, explained wheel alignment, brakes, steering mechanism, and other functions of the car.

Selection of first prize winner was unanimous by the three judges, W. K. (Bill) Toboldt, editor of *MOTOR AGE*, E. S. Babcox, publisher of *Brake Service Magazine*, and Herbert Lewis of the Reuben H. Donnelly Corp.

J. S. Doyle, manager of Johns-Manville's automotive department, in presenting the \$1,000 check to Keefer at a dinner in Dubois, said, "In organizing what virtually is a one-man defense program against automobile accidents, Mr. Keefer has rendered an outstanding service to his community. Automobile accidents caused 31,000 deaths and more than a million serious injuries in 1939, many of which were directly attributable to the faulty mechanical conditions of the cars involved. Through this campaign of education Mr. Keefer has made thousands of car owners conscious of the importance of checking their cars regularly for mechanical faults which might cause accidents."

Special Service School

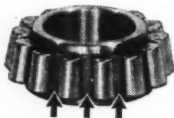
Nearly 500 Studebaker dealers' service managers, service salesmen and shop foremen from all over the country are expected to attend five days of special service school in South Bend, Ind., September 3-7.

During the five days of intensive instruction, every student will receive full instructions on all subjects, according to D. O. Wilson, Studebaker service manager. Classes will be restricted to a minimum of 25 students each to insure personalized attention.

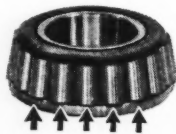
Instructors will be members of Studebaker's engineering and general service departments. The platoon system will be employed with classes moving on a prearranged schedule from classroom to classroom as the various subjects on the carefully worked-out program are presented.



In a tapered roller bearing, the purpose of the cage is to hold the rolls in position until the bearing is installed. After that, it has no function, and is frequently the source of bearing failure.



This is how a cage-type bearing looks, with the cage lifted off. Notice the "waste" spaces between rolls. If the cage were eliminated, it would be possible to add one-third more load-carrying rolls around the cone.



This is exactly what Tyson does, as shown here. Tyson's one-third more rolls mean correspondingly greater capacity . . . twice the bearing life . . . maximum rigidity. That's why it pays to "tie up with Tyson."

Cageless FOR HARD SERVICE *Cage-type* FOR REGULAR SERVICE

Tyson

TYSON ROLLER BEARING CORPORATION, MASSILLON, OHIO

KING QUALITY THE COMPLETE PARTS LINE



WATER PUMP PARTS

BUSHINGS BEARINGS

PISTON PINS PISTON RINGS

PISTONS VALVES

CYLINDER SLEEVES SILENT-U

BOLTS SHACKLES

WHEEL SUSPENSION PARTS

KING QUALITY PRODUCTS

KING QUALITY THE COMPLETE PARTS LINE

AUTOMOTIVE MEN

Alfred P. Sloan, Jr., chairman of General Motors Corp., issued the following statement regarding action taken at the meeting of the board of directors last month:

O. E. Hunt, vice-president and member of the Administration Committee of General Motors Corp., was elected a member of the Policy Committee, with specially-assigned duties. H. H. Curtice, vice-president of the corpora-

tion and general manager of the Buick Motor Division of General Motors, was elected a director of the corporation to succeed Seward Prosser, recently resigned. C. L. McCuen, general manager of the Olds Motor Works Division of General Motors, was elected a vice-president of the corporation and transferred to the central office, in charge of engineering activities.

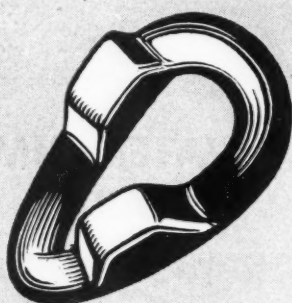
In addition, the following organiza-



Left to right—S. E. Skinner, C. L. McCuen, and D. E. Ralston, Olds sales manager.

**GREATER SAFETY
LONGER MILEAGE
BIGGER PROFITS** } *with*

**Campbell
LUG-
REINFORCED
Tire Chains**



*The Greatest
Advance in
Tire Chains
in a Decade*

Here's a chance to make money—once again—on tire-chainsales...with Campbell Lug-Reinforced Tire Chains. Here are chains your customers have been demanding for years. They can tell just by looking at Campbell Lug-Reinforced Tire Chains that

these chains are scientifically designed and constructed for greater safety and for greater mileage—service they never before even hoped to get. Don't miss these extra sales opportunities...get in touch with your jobber today. If he can't supply you, write direct.

*No Other
Tire Chains
Give You
All These
Advantages*

1. ONE-PIECE CONSTRUCTION... Finest molybdenum steel. One piece. No welded bars to break off. Longer life.

2. POSITIVE ALL-WAY TRACTION... Exclusive, patented saw-tooth design guarantees new high in traction under slipperiest conditions—ice, snow, etc.

3. LONG LIFE... Finest case-hardened alloy steel, positive traction, and one-piece construction give you mileage you never expected.

4. FULL PROFITS... Your profits on Campbell Lug-Reinforced Tire Chains are generous and fully protected. These chains are sold only through respected, carefully selected channels of distribution.

INTERNATIONAL CHAIN & MFG. CO.
YORK PENNA.

tion changes are being made:

S. E. Skinner, general manager of Ternstedt Manufacturing Division, to become general manager of Olds Motor Works Division, J. W. Jackson, works manager of Ternstedt Manufacturing Division, to become general manager of Ternstedt Manufacturing Division. F. C. Kroeger, general manager of Delco-Remy Division, to become general manager of Allison Division. O. V. Badgley, factory manager of Delco-Remy Division, to become general manager of Delco-Remy Division.

In a reorganization of the management of The Goodyear Tire & Rubber Company proposed by P. W. Litchfield and approved by the board of directors, Litchfield divested himself of the title of president, retaining the chairmanship of the board, Sept. 1. Edwin J. Thomas advanced



P. W. Litchfield

from the executive vice-presidency to the presidency of the \$190,000,000 company, which he joined 24 years ago as a stenographer in the chemical laboratories. Public announcement of the change was made by Litchfield in Goodyear theater last month to a gathering of the supervision and executive personnel of the company.

Appointment of Theodore F. MacManus as advertising counsel to Willys-Overland Motors, Inc., was announced in Toledo last month. Joseph W. Frazer, president and general manager of Willys, made the announcement in a joint statement, with Ward M. Canaday, president of United States Advertising Corp., which is servicing the Willys account. Canaday said he had interested MacManus in working with the United States agency as counsel in complete charge of Willys-Overland advertising.

AUTOMOTIVE MEN

Charles F. Kettering, president of General Motors Research Corp., has been named chairman of a National Inventors Council whose job will be to encourage inventions by civilians and to appraise their usefulness from the standpoint of national defense. The council, to be set up under the Department of Commerce, has been directed to cooperate closely with the National Defense Research Committee headed by Dr. Vannevar Bush, president of the Carnegie Institution.

Promotion of R. C. Somerville and A. D. Innis to the newly created posts of Sales Supervisor of the Plymouth Division of Chrysler Corp., is announced by general sales manager Joseph E. Bayne. Somerville's new duties will embrace supervision of



A. D. Innis

R. C. Somerville

sales activities in all the Central States, and Innis will supervise Plymouth field sales activities in the East, with offices in New York. As in the past, Plymouth sales activities on the West Coast will be directed by G. V. Orr, vice-president of Chrysler Motors of California.

H. F. "Barney" Stevens, long connected with the industry, has established himself as a manufacturer's agent covering eastern Pennsylvania, southern New Jersey, Maryland, Delaware and the District of Columbia. He can be reached through the Philadelphia Automobile Trade Assn., Inquirer Bldg., Phila., Pa.



A group of M.E.M.A. members get together for golf after a recent group meeting in Baltimore. They are, left to right, L. G. Matthews (Sealed Power), L. B. Davis (Perfect Circle), G. L. Penty (Credit Clearing House Adjustment Corp.), R. D. Pippen (American Hammered), and C. M. Canedy (Black & Decker).

Robert K. Edmonds has joined MacManus, John & Adams, Inc., and will be a member of the Pontiac Motor Division group on copy and contact.

L. W. Ward, manager of the Cleveland zone for Pontiac, has been promoted to the zone managership at St. Louis, succeeding Lansing Thoms, who has resigned to become a Pontiac dealer in St. Louis, according to D. U.

Bathrick, general sales manager of Pontiac Motor Division. Ward will be succeeded at Cleveland by H. T. Thompson, who has been district manager and assistant zone manager there since 1932.

Fred Jones, Ford dealer of Oklahoma City, was appointed to serve as a "\$1 a year man" on the National Defense Commission under leadership of William S. Knudsen. Jones will be assistant to J. C. Nichols, Kansas City, Mo., head of the miscellaneous materials department.

Cash-in on tune-up work the sure easy way!

ELIMINATE GUESSWORK BY USING A

Shurhit

STROBOSCOPIC ANALYZER

Tune-up service is big business... it's profitable business—and with an amazingly small investment it's a major service you can add to your present business. Greater mileage per gallon of gas, and peak performance under all conditions are factors which appeal to car owners, and it has been proven that dealers can sell tune-up service, and make real money, providing they use modern equipment such as a Shurhit Stroboscopic Analyzer.

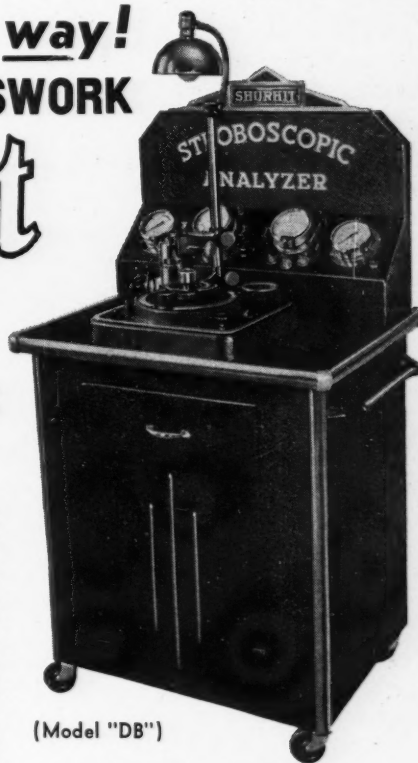
What others are doing, YOU can do. For example, take the experience of Jack Warren of Warren Automotive Co., Milwaukee. Mr. Warren writes—"The Shurhit Stroboscopic Analyzer does pay for itself in dollars and cents, and it has increased our tune-up business to an unbelievable extent in a short period of time. . . . We are selling four to five times as many ignition repair parts now compared to what we were selling before we purchased our Stroboscopic Analyzer."

YOU, too, can really go to town with a Shurhit Stroboscopic Analyzer. It takes all the guesswork out of tune-up service and enables you to quickly and easily turn out jobs that are 100% accurate.

Learn how you can get Shop Tools and Equipment FREE. Offer expires Sept. 15, 1940.

Write for details

CLIP and MAIL COUPON TODAY



(Model "DB")

ONLY \$11.00 a month

The Shurhit Stroboscopic Analyzer accurately discloses the true condition of the distributor, as well as the coil and condenser, if the coil on the car is used. It also shows presence of worn bearings, worn shaft, or both; rough cam, uneven cam, weak contact springs, poor condition of contacts, improper spacing of contacts, as well as the performance of the coil and vacuum spark modifier in coordination with governor advance. This equipment enables you to detect trouble, make corrections, check your work and profitably merchandise tune-up service. It also helps sell ignition parts—thus showing you double profits.

SHURHIT PRODUCTS, Inc.
Waukegan, Illinois

☐ How can I get equipment FREE?

☐ Send details on Model "DB."

SIGNED

FIRM NAME

ADDRESS

CITY..... STATE.....

NAME OF JOBBER.....

WHAT LUBRICANT WHERE?

(Continued from page 41)

in mind that they will be lubricated with these specialized lubricants. Therefore, the operator of the modern lubrication department has to know what lubricant to use, and where.

Take gear lubricants for example: there was a time when the old "600-W" was poured into transmissions, differentials and steering gears alike,

with little thought as to whether it was suitable for that particular type of service. Today, fluid gear lubricants are provided in regular grades for ordinary service, extreme pressure (or "EP") where gear tooth pressures are above normal, and hypoid grade for the hypoid rear axle gears and some transmission over-drive units. Because of the ingredients

used in the manufacture of these specialized gear lubricants, it has been considered harmful if one make of lubricant was allowed to mix with another make. Further advancement in manufacture has developed a lubricant that can be mixed with other makes without harmful effects, and which has a wide range of use throughout the lubrication field since it meets the requirements of a number of car manufacturers for various units.

Engine oils also have gone through the process of evolution to develop qualities demanded by the modern automobile engine. High engine speeds with the resultant increase in temperature, closer clearances between bearing surfaces and the use of new materials in the construction of the cylinder block, valves, pistons and bearings have all combined to make necessary an engine oil which will stand up under normal operating conditions produced by the present-day engine.

Chassis lubricants, special lubricants for water pumps, universal joints, wheel bearings, steering gears, spring covers—all have come into being to meet some particular requirement. Satisfactory operation of the car and long life to its working parts demand that these special lubricants be used in the right places and at the regular intervals recommended by the car manufacturer.



"dag" colloidal graphite is non-injurious to rubber car parts

Use a rubber lube containing "dag" colloidal graphite on those squeaky shackles, engine mountings — any rubber part that is giving "Birdies" trouble. It is harmless to rubber and will stop the "comebacks."

Acheson worked out the formulas which have been patented with "dag" colloidal graphite as the basic part. Its minute particle size makes quick penetration sure. And the presence of the solid lubricant keeps the squeaks away longer. Any gun giving a needle stream may be used to apply these rubber lubricants — they are **NON-POISONOUS, NON-INFLAMMABLE, and WILL NOT ATTACK CAR FINISHES.**

Selected marketers blend and package "dag" colloidal graphite rubber lubricants under their own trade-marks. We will gladly supply the addresses of several such companies. Send for folder.

ACHESON COLLOIDS CORPORATION
PORT HURON

MICHIGAN



Willard Merchandisers

For the coming battery season, Willard Storage Battery Co. is releasing an entirely new merchandising plan for its dealers. The plan revolves around two basic selling units designated as "Junior" and "Senior" Merchandisers.

The former is for dealers who do not ordinarily carry more than five batteries in stock, while the latter is tailored to the needs of dealers who normally display more than five batteries.

Integral parts of the "Junior" campaign include a "Proof Poster," which presents the four advantages of the new 1940 Willards, cutouts for use in connection with several featured battery types, a battery service chart, a promotional booklet titled "Why Should I Buy A Willard?" and "Safety-Fill" folders which detail the advantages of this exclusive Willard feature. In addition there is a complete manual on retailing and a number of new designs and display items.

The "Senior" Merchandiser consists, in the main, of the display rack, a new poster which simplifies Willard's "Fit The Battery To The Job" plan, a "Safety-Fill" demonstrator, cloth banner, window valance, window poster and poster set, along with a number of the other selling tools in connection with the "Junior" Merchandiser.

PRESENTING

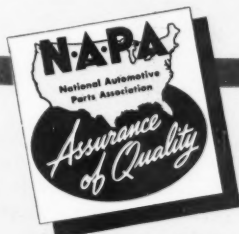
Allied MOTOR PARTS



- smartly and uniformly packaged
- every part built to highest standards—
carries NAPA's "Assurance of Quality"
- one convenient and comprehensive catalog
- complete factory stocks maintained in 38
NAPA Warehouses
- one convenient and cooperative source of
supply on motor parts for all cars. Excep-
tionally fast service on parts you seldom
need . . . See your nearest NAPA jobber.



Pistons
Piston Pins
Piston Pin Bushings
Piston Pin Set Screws
Piston Pin Lock Rings
Valves
Valve Keys
Valve Guides
Valve Springs
Expansion Plugs
Cylinder Sleeves
Cylinder Sleeve
Assemblies



ALLIED MOTOR PARTS COMPANY • DETROIT

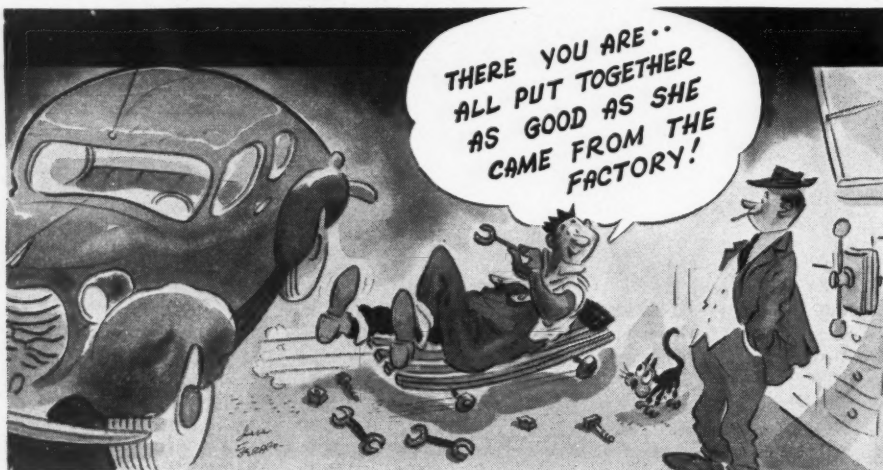
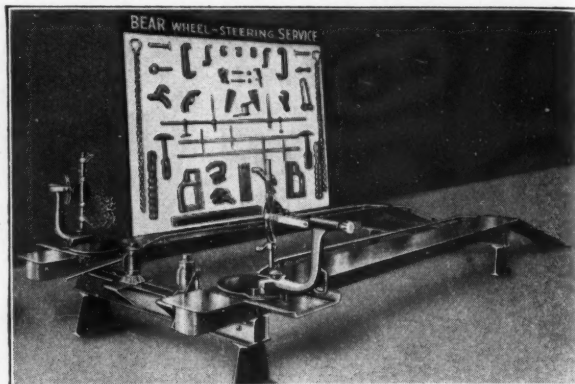
Belden Battery Connector



A new friction type battery connector for positive connection between storage batteries being charged in series is announced by Belden Mfg. Co., 4689 W. Van Buren St., Chicago, Ill. The connection fits snugly onto the binding post, giving a positive connection, and is said not to damage the post. The connector is provided with a 14-in. insulated lead.

New Bear Outfit

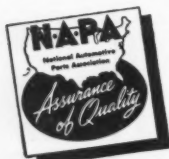
Bear Mfg. Co., Rock Island, Ill., is introducing a new outfit for handling wheel alinement service which is priced below similar units previously announced. The new outfit is known as 195-82, and includes convertible rack; front end alinement units; toe-in, tacking and alining



● Don't wait for bearing knock before you check for bearing wear. The first warning that bearings need replacement is *excess oil consumption*. And when worn bearings are responsible for oil-pumping, only new bearings can permanently correct it. Replace with Monmouth Engine Bearings—the same bearings used as original equipment in the majority of passenger car, truck, and tractor engines. Original equipment alloys—babbitt, cadmium-nickel, and copper-lead, packaged in pairs and complete rod bearing sets. For an easier job and a satisfied customer—Monmouth is the Name!

NOTE: In regrinding crankshafts, always regrind to standard undersize to permit use of factory-finished undersize bearings.

MONMOUTH PRODUCTS COMPANY, CLEVELAND, OHIO
Engine Bearings • Clutch Plates and Clutch Parts • King Bolt Sets



Master stocks of Monmouth Engine Bearings are maintained in NAPA Warehouses from coast to coast, assisting hundreds of jobbers in every section of the country to give you prompt service even on rarely called-for numbers.



THE SAME BEARINGS USED AS ORIGINAL EQUIPMENT IN THE MAJORITY OF PASSENGER CAR, TRUCK AND TRACTOR ENGINES

gages; tire scribe; and complete parts, tools and accessories for checking and correcting all passenger car axles including both conventional and knee action types. The unit offers the further advantages of adding tools from time to time for handling complete frame straightening work.

Displays Help Sell



Dealers say that the new cut-out display for LUBAID is responsible for many unsolicited sales of this product, designed to protect against engine varnish, keep rings and valves free and prevent seizure. It takes up very little space, and its attractive coloring is an effective eye-catcher.



Another cut-out display is available for LUBAID-T, a top cylinder lubricant and motor tune-up oil. It is also used as a penetrant for loosening rusty bolts, nuts, screws, etc. The Lubaid Co., Milwaukee, Wis.

HELPING TO MAKE YOUR MOTOR VEHICLES COST LESS and PERFORM BETTER

THIS, Gentlemen, is why there is such an organization as Bendix, producing component parts for American motor cars, trucks, buses and aircraft . . . to help make vehicles cost less and perform better. Bendix could not exist if this were not true.

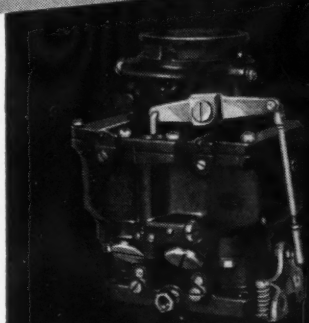
The truly vast Bendix production capacity, ultra-modern manufacturing equipment, and millions of dollars annually invested in Bendix research and development, would have to be wastefully duplicated many times over, were it not for the fact that Bendix serves you *all*.

This service, to manufacturer, wholesaler, dealer and service man, carries straight through to the car and truck owner, whose vehicle is a better investment because of its good, sound Bendix units, universally serviced.

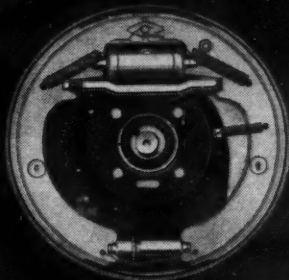
This is the simplest sort of elementary economics, of course. Our only reason for bringing it to your attention is to "point up" one plain thought that will help us to help you. It is this:

Whether you build, or sell, or service, or operate motor vehicles, the Bendix plants are *your* plants, their far-reaching facilities *yours* to command, just as surely as though we Bendix people formed a department under your own roof. What we know, through long years of intensive work in Carburetion, Braking, Gear-Shifting Devices, Hydraulic and Vacuum Remote Control—all this is part of *your* resources.

As succinctly as we can, we express it in this manner—



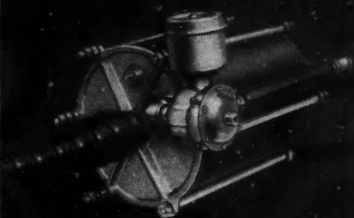
Stromberg Automotive Carburetors



Bendix Automotive Brakes



Bendix Finger-Tip Gear Control



Bendix B-K Controlled Vacuum Power Braking

BENDIX PRODUCTS DIVISION OF BENDIX AVIATION CORPORATION South Bend, Indiana

In Canada: Bendix-Eclipse of Canada, Ltd., Windsor, Ontario

"Yours, in all sincerity,"

Bendix

COLD CANVASS PAYS

Brooklyn service operator goes calling when things are slow. House-to-house canvass best business lever, he says



By J. ED. FORD

DU-1 The New P & D Merchandiser That Has EVERYTHING!

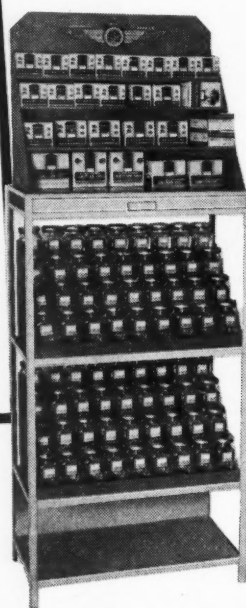
With the DU-1 you can build your own ignition parts, wire and cable departments exactly as you need them for your trade. The 5 Units (cabinet only free at dealer prices) described below are removable and interchangeable. Your present P. & D. DA-21 and DA-40 Cabinets also fit the new stand (included free at dealer prices with all purchases of 3 of the open display units). You need this new, up to the minute display merchandiser with its practical assortments. It is a regular parts store.

Select your own combination from 5 interchangeable units.

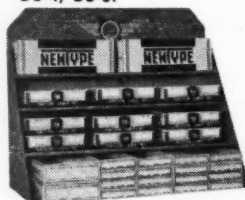


1. DU-2 — Distributor Caps, Switches, Coils and Voltage Regulators, individually and attractively boxed.
2. DU-3 — Spark plug cable sets, New Type NOKRODE battery cables in fast moving sizes only. Two lighting harnesses included
3. DU-4 — Popular, fast moving assortment of contacts and condensers.
4. DU-5 — Generator and starter brushes and distributor rotor assortment.
5. DU-6 — Combination assortment for Ford, Chevrolet, Plymouth and other popular cars. Includes contacts, condensers, brushes and rotors.

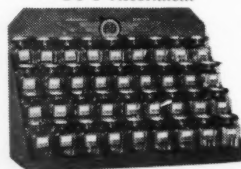
Write for complete descriptive leaflet today. Ask your P. & D. jobber about this new idea in merchandisers.



The DU-1 complete (cabinets and racks free at dealer prices) photo shows DU-2, DU-4, DU-5.



DU-3 Assortment



DU-6 Assortment



NEWTYPE WIRE, CABLE, TAPE and NOKRODE BATTERY CABLE UNITS

P. & D. MANUFACTURING COMPANY, Inc.

STARTING
LIGHTING
IGNITION

LONG ISLAND CITY
NEW YORK
REPLACEMENT PARTS

P. & D. Manufactures ONE complete quality line. Only the finest materials and workmanship obtainable are employed.
YOU CAN NOT PURCHASE ANY FINER QUALITY

IS it possible for an independent shop to sell service by a cold canvass in its vicinity? Before we dismiss the idea as fantastic, let's have a look at what Al's Parkway Service, Inc., of Brooklyn, N. Y., has been doing along these lines in recent months.

Early in the spring, Al Hallock, who operates the shop, and Frank Franchina, who runs the gasoline and lubrication end of the station, tried a direct-mail stunt. This consisted of mailing cards to several hundred owners, urging them to have their cars readied for spring driving at Al's Parkway Service, and announcing that the station had a gift for them if they would only drive in. Some owners did drive in, but the response as a whole was disappointing. Another mailing was made, and the response still was not up to expectations.

An afternoon came when business was a little dull on the lifts and at the pumps, and the partners did some wondering about this free-gift business and its disappointing results. It seemed that customers suspected a catch. One way to overcome the suspicion was to make an outright presentation of the gift. That could be done only by sending it or taking it in person. As things were slack, Franchina decided to be the delivery service.

The gift was merely a rubber apron, liked by most women for wear in the kitchen, and obtainable at dime stores. Franchina took some of these aprons, some business cards, and started to call on owners who had already received two mailing pieces but had not yet visited the station. In an hour, he had called on ten. He made no sales talk whatever, simply leaving the apron and card at the house, almost always with a woman. The next time he ran into a slack afternoon, he made more calls. Today these personal calls are routine. They pay.

Take the last two weeks in June. In that time, Franchina made 25 personal calls. Aside from two and a half hours of his own time—which wasn't bringing a high price at the moment because he would have been loafing at the station if he hadn't been canvassing—the total expense was four cents apiece for the aprons and
(Continued on page 90)

We Burn Up Valves in Our Engines
to Make Them Last Longer in Yours!



Rich Valves and other valve gear units being installed in engine previous to road test.

WILCOX-RICH maintains what is probably the world's largest and most completely equipped engineering laboratory devoted exclusively to the development of valves and other units of the valve mechanism.

Many hours of actual operation—with special "valve-destruction" camshafts—concentrate more valve punishment in dynamometer and road tests than the parts are likely ever to encounter in normal use.

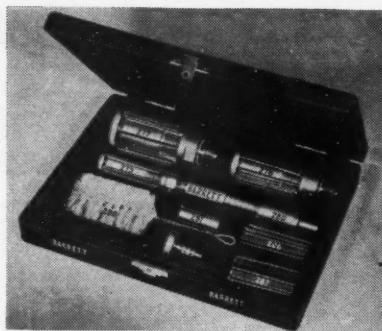
When you specify Rich Valves, you are buying a known quantity of performance and service life.

**RICH
VALVES**
OF SILCROME-X STEELS

RICH VALVES are made of SILCROME-X STEELS. They are sold for replacement only by McQUAY-NORRIS and KING QUALITY JOBBERS . . . WILCOX-RICH Division of EATON MANUFACTURING CO., Detroit, Mich.

Brake Cylinder Hone Set

The Barrett Equipment Co., 2101 Cass Ave., St. Louis, Mo., has announced a brake cylinder hone set using a flexible shaft drive so that the hone can be used either while the cylinder is in position on the car or for regular bench operation. Any $\frac{1}{4}$ in. or $\frac{1}{2}$ in. electric drill can be used as driving power. The new hones can be used on all types of master cylinders, as well as step or straight bored wheel cylinders. They are fitted with multiple number of blade slots and micrometer adjustment nuts to give a

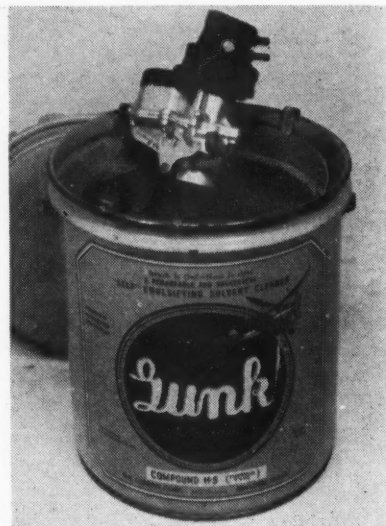


wide range of adjustments. The hone set comes complete, and is packed in

compartment type boxes finished in black leatherette. Sets are available for handling passenger cars and light trucks, or for the complete range of passenger cars and all types of trucks.

Gunk Solvent Cleaner

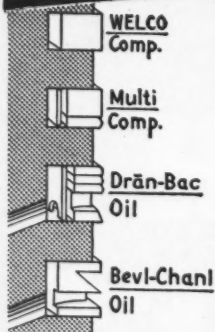
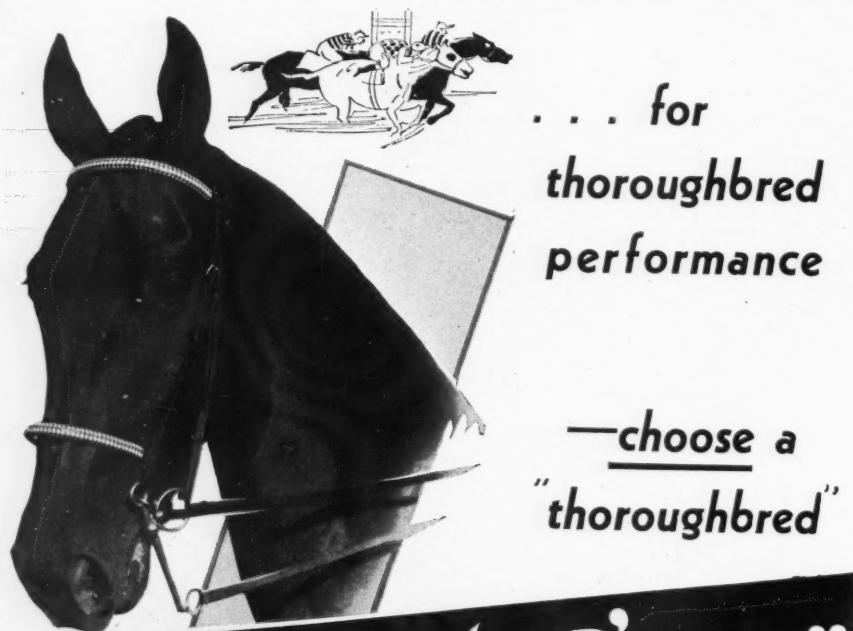
The Curran Corp., 6 Pleasant St., Malden, Mass., has developed a new product to add to the "Gunk" line of



cleaning products. The new member is Gunk Compound H-S, a self-emulsifying solvent cleaner for cleaning dirt and grease from automobile parts. It cleans as a cold solution—applied with a brush and then washed off with a hose.

Emergency Brake Link Silencer Introduced

One of the latest items to be added to the line of short cuts manufactured by Champ Items, Inc., 6191 Maple Ave., St. Louis, Mo., is the No. 995 Rear Wheel Emergency Brake Link Silencer, illustrated. Designed for the 1939-40 Ford and Mercury cars, the spring is hooked from the emergency brake lever to the grease baffle of the rear wheel. It is claimed that the spring does not interfere with brake action and its application is very simple. A sample will be mailed upon request.



Thoroughbreds too, are "H" Sets! They give motors that "quick-on-the-trigger" performance of the polo pony—speed and stamina PLUS! Plus an oil economy that pegs a new high for performance in worn, tapered cylinders.

Precision-Engineered

"H" Sets are precision-engineered, individualized to the motor, piston and ring groove designed to receive them. Their long-lived flexibility and multiple wiping edges stop oil pumping, blow-by and actually s-l-o-w-d-o-w-n cylinder wear. "H" Sets have rings for all grooves and each ring is Welco-finished!

Ring Specialists Depend on "H" Sets

90% of all ring jobs you get can be licked with "H" Sets. And they'll do the job right the first time . . . no comebacks.

Jobbers, Ring Specialists: Send for sample of our "H" Sets and get our proposition, NOW!

Wire or Write NOW for our Proposition! Your territory may be open.




Licensed under patent 2148997

More than ever...
GOOD ELECTRICAL TOOLS
ARE IMPORTANT!

that's why...

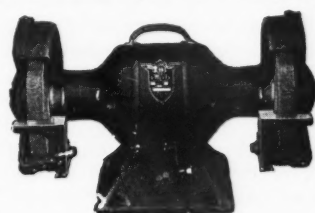
UNITED STATES ELECTRICAL TOOLS ARE THE "GOOD MECHANICS' CHOICE"

YOU'RE critical . . . the *public* is critical . . . *we're* critical . . . jobs and tools **MUST** be right. Place absolute confidence in UNITED STATES ELECTRICAL TOOLS . . . depend on them to make your work easy, quick and profitable . . . rely on them to cut your shop costs to the bone.



SUPER-SERVICE SURFACER

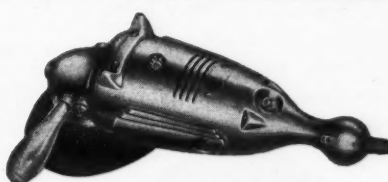
Exceptionally powerful for heavy duty sanding, right angle grinding, planing, gouging or rubbing operations. Equipped with cup wire brush for wire scratch brushing; with 6" cup or saucer wheel for grinding castings, etc.; with planer head for shaping and surfacing timbers, etc. Streamlined design. Straight line ventilation.



6" BENCH GRINDER
 with safety eye shields and adjustable lamp

For grinding all kinds of edge tools and for general purpose grinding. For continuous service. Totally enclosed motors.

Write for new Catalog No. 55

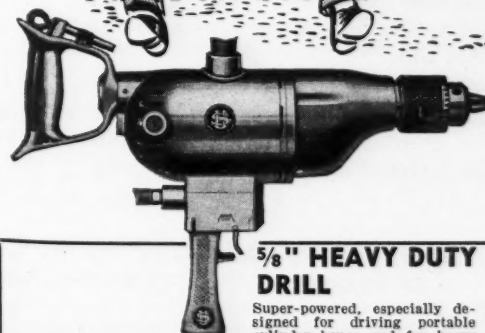


7" PORTABLE SANDER

For general purpose operation. High speed. Light weight. Streamline design with straight line ventilation which prevents clogging and assures cool motor operation. Air outlet diverts dust-laden air from operator. Flexible rubber pad adapted for flat or curved surfaces. Reversible handle.

★ ★ ★ ★ ★

We favor an adequate preparedness for National Defense and recommend enlistment to eligible young men.



5/8" HEAVY DUTY DRILL

Super-powered, especially designed for driving portable cylinder hones and for heavy mounted in two radial thrust bearings. Chrome nickel steel gears, heat treated, packed in grease and sealed.

THE UNITED STATES



ELECTRICAL TOOL CO.

CINCINNATI,

OHIO, U.S.A.

Goodrich and Phillips To Make Synthetic Rubber

Stating their intention to increase the production of synthetic rubber so that additional commercial quantities can be made promptly available for use in national defense and throughout industry, David M. Goodrich, chairman of the board of The B. F. Goodrich Co., and Frank Phillips, chairman of the board of Phillips Petroleum Co., have announced the for-

mation of Hydrocarbon Chemical & Rubber Co.

The new company acquires from Goodrich experience in the production and use of synthetic rubbers, and from Phillips the benefit of large resources of natural raw materials and a back-ground of hydrocarbon research.

The speed with which the company

plans to increase its production has been made practical, it was explained, because of the rapid strides within the past few months in developing compounds of these new materials for a large number of commercial needs. "In fact, it can be said that we have learned almost as much about processing synthetic rubber in 100 days as was learned about natural rubber in 100 years," the announcement declared.

The directors of Hydrocarbon Chemical & Rubber Co. representing Phillips Petroleum Co. are Frank Phillips, chairman; K. S. Adams, president and G. G. Oberfell, vice-president in charge of research. Representing the B. F. Goodrich Co. are David M. Goodrich, chairman; John L. Collyer, president and T. G. Graham, vice-president in charge of production.

In charge of sales for the new concern will be Ross W. Thomas, who is general manager of the Philgas division of Phillips. Dr. Waldo L. Semon will be director of research.

The new company's principal offices will be located in Akron, Ohio.



Here's how HYPRESSURE JENNY Steam Cleaner opens 3 new ways to profits:

1. HYPRESSURE JENNY increases your *net* on repair jobs by saving 25% to 40% on labor costs! (Mechanics lose 15 to 25 minutes out of every repair-man-hour "fighting" grease and dirt. Steam Cleaning before repairs eliminates this.)
2. HYPRESSURE JENNY cleans motors and chassis spic-and-span. Sell this new profit-service with washes and lubes! (Jenny cleans a motor in 10 to

15 minutes—job sells for \$1.50 to \$3.00!)

3. When used cars are cleaned with HYPRESSURE JENNY to new car appearance, they bring from \$15 to \$50 more.

Investigate this three-fold profit opportunity now. Fill in and send the coupon for a free survey today.

HOMESTEAD VALVE MFG. CO.
P. O. BOX 95 CORAOPOLIS, PA.

SEND FOR THIS
FREE SURVEY
TODAY!

O. K.— Send that Survey.

We recondition, repaint, repair.....cars or trucks monthly.

We employ.....mechanics on dirty, greasy repair work.

NAME.....

ADDRESS.....

SURVEY

Only Wagner CoMaX Brake Lining has all these features and advantages



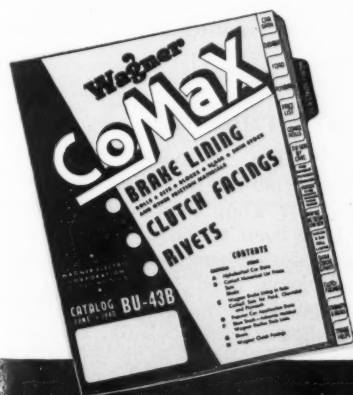
CoMaX Brake Lining is available in sets, rolls, blocks and slabs.



Wagner Brake Testing Laboratory in St. Louis is one of twenty-six Wagner Proving Grounds.

GET FREE COPY OF NEW WAGNER CoMaX CATALOG

It isn't necessary to look on a dozen different pages or in a couple of different catalogs in order to get complete and correct information on brake lining. The answers can be found quickly and easily in the new BIG catalog BU-43B. It's the most complete book of its kind ever published by Wagner. It contains some 120 pages packed with the latest data and specifications, and is unusually complete. Handy INDEX saves time and trouble in locating information desired.



**GET
SERVICE
MANUAL
and CAP
FREE**

- 1. CoMaX IS LONG LIVED.** It wears slowly and gives longer service.
- 2. HAS REINFORCED BACKING.** Permits deep seating of rivets and increases thickness of lining available for braking service.
- 3. NON-COMPRESSIBLE.** Does not compress under brake pressure. Brakes lined with Wagner CoMaX run for long intervals without needing adjustment.
- 4. UNIFORM IN TEXTURE.** As the lining wears, the same type of brake surface is always exposed to the drum.
- 5. EASY ON DRUMS.** Contains no abrasive material.
- 6. EXCELLENT FOR HIGH SPEEDS.** Maintains its perfect performance under severe braking conditions.
- 7. QUIET.** Grips silently. No howling or squealing.
- 8. SMOOTH.** Uniform friction permits even, controllable deceleration.
- 9. AGE-PROOF.** Does not deteriorate with age.
- 10. RIGIDLY TESTED.** Wagner maintains 26 proving grounds.

In addition to supplying a product of the highest quality, Wagner goes further through work done by the 26 Wagner Proving Grounds. As manufacturer of Lockheed Hydraulic Brakes, Wagner has a valuable background of experience in braking problems. Wagner is well equipped to know the type of lining a brake should have—and this knowledge is reflected in CoMaX specifications.

Wagner interest, however, does not stop with the manufacture of brakes or with the sale of CoMaX. A "never-ending" first-hand study of all braking problems is carried on in the Wagner Brake Testing Laboratory in St. Louis. Tests made in this great scientific laboratory are supplemented by handling actual service jobs in the model service departments of 25 strategically located Wagner branches, a total of 26 Wagner Proving Grounds which duplicate driving conditions found throughout the world.

Consult your nearest Wagner jobber today for complete information, or write us.

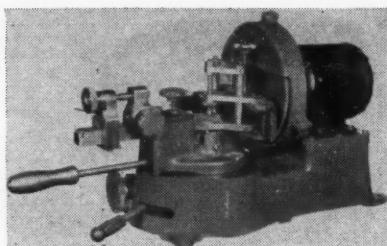
Clip and Mail Coupon Today!

AUTOMOTIVE PARTS DIVISION
Wagner Electric Corporation
 6400 Plymouth Avenue, Saint Louis, Mo., U.S.A.
 Send complete information on Wagner CoMaX. Also send Catalog No. BU-43B and service cap FREE.

Firm _____
 Name _____
 Address _____
 City _____ State _____
 My Jobber is _____

Brake Shoe Grinder

A junior model of Lempco's larger brake shoe grinder has been announced by Lempco Products, Inc., Bedford, Ohio. This new model has been designed especially for all rolled or stamped steel, T-rail type brake shoes, used on practically all passenger cars and light trucks. The big advantage claimed for the junior model by the manufacturer is that all shoes are ground with the same set-up. No attachments are required. A special micrometer adjustment on the turret allows for feeding in the



shoe any amount if it does not clean up on the first grinding pass. Shoes are clamped in a specially designed device that holds them firmly and locates them in a plane parallel to the

surface of the grinding wheel. A solid, long-life grinding wheel is used, molded under pressure with the grains bonded by a plastic substance and does not require dressing, according to the manufacturer.

Rimac Ring Master

The latest product to be announced by Rinch-McIlwaine, Inc., 16 Hudson Street, New York City, is the piston ring compressor No. 220, known as the Ring Master. The outer tension bands are half-inch wide of finest spring steel. The ratchet pawl and fine teeth are hardened for long usage.



Square offset handle fits snugly into socket and affords ample leverage, and a double friction brake adjustment is used in addition to the ratchet, preventing the compressor from slipping as the piston is inserted into the cylinder. Price \$1.90 net.



Perfect Balance!
in every
Cole-Hersee
PRODUCT

Yes Sir!

It's the "COHECO" Testing of every *Cole-Hersee* Product before it leaves the factory that assures you of the positive uniformity of precision workmanship and high quality of every *Cole-Hersee* Product.

Any wonder *Cole-Hersee* Products are used by leading car manufacturers as original car equipment.

TRI-SWITCH AUXILIARY PANEL



AN IMPORTANT
ACCESSORY SINCE
RECENT CAR MODELS
AFFORD NO DASH SPACE
FOR ATTACHMENT OF
SWITCHES WITH WHICH
TO OPERATE
IMPORTANT ACCESSORIES.

ALL SWITCHES
FOR THIS PANEL
ARE OF THE
HEAVY DUTY TYPE

The switch knobs, not the panel, designate the purpose of the switch, thus offering a flexible unit.

No. SD-13 KIT



COLE-HERSEE COMPANY

54 Old Colony Avenue Boston, Mass.

Rep.—Eastern, Canada Ontario Quebec Maritimes
S. F. BACHER & CO. 310 Spadina Ave. Toronto, Ont.



SEND FOR
NEW 1941
CATALOG
to Dept. A-9

McGill Announces New Double-Row Bearing

The McGill Mfg. Co., Valparaiso, Ind., announces a new maximum-capacity double-row ball bearing which is designed for more liberal load ratings because of the greater number of balls in each row supporting the races. The extra balls are assembled through filling slots in the faces of both the inner and outer race. Standard McGill bronze retainers, said to assure durability, cooler operation and longer bearing life, are built into the new maximum-capacity double-row bearing.

Thor Grinders

Built for all-around service in grinding, buffing and wire wheel work, three new Thor electric bench grinders have been added to the line of the Independent Pneumatic Tool Co., 600 W. Jackson Blvd., Chicago, Ill. The three sizes—6 in. light duty (B-66), 6 in. heavy duty (B-6), and 7 in. heavy duty (B-7), have motors completely enclosed, cool, quiet running and free from vibration, according to the manufacturer.

SAFE, FAST, EASY HYDRAULIC ACTION and LOW PRICE make HEIN-WERNER JACKS

*the logical choice of men who drive
passenger cars, trucks or buses*

When a jack is needed, on the road or in the shop, you just can't beat a modern, easy-operating Hein-Werner Hydraulic Jack.

The ease and speed with which cars and trucks can be lifted, when tires need to be changed, soon more than pays for one of these *hydraulic* jacks. No driver should be without one.

All H-W Jacks are soundly engineered. Ruggedly built. Compact. Safe. Factory tested at $1\frac{1}{2}$ times rated capacity. Each has leak-proof hydraulic unit and large sled base.

This complete line includes $1\frac{1}{2}$ ton capacity *hydraulic* jack at only \$2.80 ... 2 ton model, \$2.95 ... 3 ton model, \$6.95 ... 5 ton, \$8.95 ... 8 ton, \$11.75 ... 12 ton, \$17.50 ... 20 ton, \$30.00. (All prices are net to dealer, and slightly higher on West Coast).

Hein-Werner also makes Bumper-Lift Hydraulic Jacks for passenger cars, and a full line of Service Jacks of $1\frac{1}{4}$, $1\frac{1}{2}$, 2, 3 and 4 tons capacity. Also SAFE-T's.

A complete line, only

\$2⁸⁰
and up

HERE'S WHY H-W HYDRAULIC JACKS are easier to operate

In a split-second, mere finger pressure is transformed into a lifting force of several tons

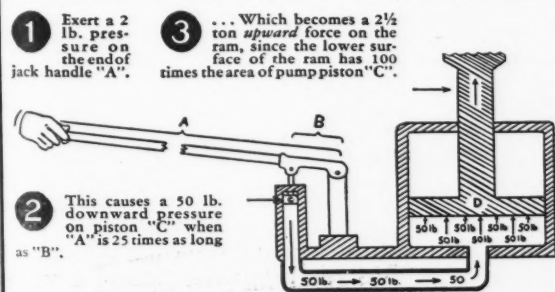


Diagram above shows basic principles of Hein-Werner Hydraulic Jack Power

HEIN-WERNER
hydraulic JACKS



8 ton capacity jack (illustrated) is made in three models—8", 9" or 11" low—each \$11.75 dealer price...Hydraulic lift $5\frac{1}{2}$ "...Extension screw 3"...High of $16\frac{1}{2}$ "...Weight, 25 lbs.

For details on complete line, ask your jobber or write us
HEIN-WERNER MOTOR PARTS CORP.
Waukesha, Wisconsin

Knudsen Reviews Defense Progress

Satisfied after several weeks as head of the industrial production division of the National Defense Advisory Commission that "we can do the job mapped out," William S. Knudsen in a recent press conference set forth these developments on various phases of the program:

Automobile industry's part in air-

craft program—Aircraft orders are not being placed with automobile concerns because War Department plans, calling for conversion of plants for aircraft production, are based on war-time conditions. Until such conditions arise, the defense commission takes the view that expansion of existing aircraft facilities and the construc-

tion of new aircraft plants offer the preferred route rather than to disrupt peace-time schedules of automobile plants.

Negotiations for the construction of 9000 Rolls-Royce engines by Packard Motor Co. are still under way, but the question of amortization has not been a factor in delaying final settlement. Packard officials are conferring with representatives of the Reconstruction Finance Corp. (In what was described as the first substantial loan to industry under the defense program, the RFC approved a loan of \$92,000,000 to the Wright Aeronautical Corp., for financing a new engine plant in Hamilton County, Ohio, designed to produce 12,000 aircraft engines a year.)

Aircraft and engines—Estimates on required capacities for planes and engines have been completed but are confidential. The industry is expected to be able to meet the goal of 25,000 complete aircraft, including engines and armor, by July 1, 1942, without any threatened interference with British orders. Existing aircraft production is 900 to 1000 planes per month with August production of 895 units divided roughly as follows: For the United States, 396; for Great Britain, 236; for other foreign countries including South American, 84; commercial planes for this country, 174 unclassified, 5.

Tanks—Months of effort will have to be expended on design alone, but tank designs are well advanced. Contracts already placed for the lighter type, include an initial order with American Car & Foundry Co. for 627. Heavier tanks are being redesigned in the light of European experience. Design of the light tanks requires 2400 individual drawings for the 155 mm. gun carriage, 1000 separate drawings, an additional 500 for the recoil mechanism; tank guns of 75 mm., 300 drawings; their panoramic sight, 160.

British aircraft purchasing program—The British Purchasing Commission has requested the defense commission to prepare cost estimates on a projected 3000-planes-a-month program. Tentative estimates showed that 38 plants, requiring from six to 11 months for construction, will be necessary, and that the goal of 3000 planes monthly could not be reached until mid-1942. The defense commission will base its estimates on disclosed types of two and four-engine planes in both combat and training categories.

Light Ordnance and Explosives—Under contracts signed with the du Pont company, a government-owned powder plant at Charleston, Ind., having a production capacity of 200,000 lb. per day, will be erected at Charleston, Ind.

FIRST and SECOND PLACES to BURD in 200 Mile Langhorne Stock Car Race

WESTERN UNION
C21 63 NT COLLECT, ST NEWARK 4
F M WHITE.
BURD PISTON RING CO.
HENRY BANKS DRIVING A STRICTLY STOCK AUTOMOBILE USING BURD PISTON RINGS WON THE TWO HUNDRED MILE RACE AT LANGHORNE PENNSYLVANIA TODAY ESTABLISHING A NEW WORLD RECORD STOP COMPRESSION TESTS WERE MADE BY THE TECHNICAL COMMITTEE OF THE AMERICAN AUTOMOBILE ASSOCIATION AND A DEFINITE INCREASE OCCURRED AFTER THIS GRUELLING TEST ON THE ONE MILE DIRT SPEEDWAY PROVING THE WORTHINESS OF THESE PISTON RINGS.
RUDY ADAMS

WESTERN UNION
VMS3 41 DL COLLECT 2 EXTRA XC, RUTHERFORD NJ 6 152P
BURD PISTON RING CO.
ATTN MR LUNDGREN.
BILL FRANCE DRIVING A 1939 CENTURY BUICK EQUIPPED WITH BURD PISTON RINGS TOOK SECOND PLACE AT 200 MILE LANGHORNE NATIONAL CHAMPIONSHIP RACE. OIL LEVEL WAS MAINTAINED. THROUGHOUT RACE WITHOUT ADDITION ALTHOUGH S.A.E. 10 WAS USED.
RED VOGT

BURD PISTON RING CO.
ROCKFORD, ILLINOIS

"Graf-Flox" PISTON RINGS

Delayed but undismayed by a crash into the fence on his 2nd lap, Henry Banks went on after lightening repairs, recouped the lost time... lead-footed his Burd-equipped Buick coupe clear through the crowded field of 36 stock cars to win the 200-mile grind at Langhorne, Pa. ... clipped 10 minutes and 15 seconds off the record. Into second place rode defending National Stock Car Champion Bill France in another Buick, also Burd-equipped. If you repair "stock cars" ... or if you sell parts for "stock cars" ... take a tip on piston rings from this smashing 1-2 victory and use Burd Piston Rings.

Now Chilton Supplies

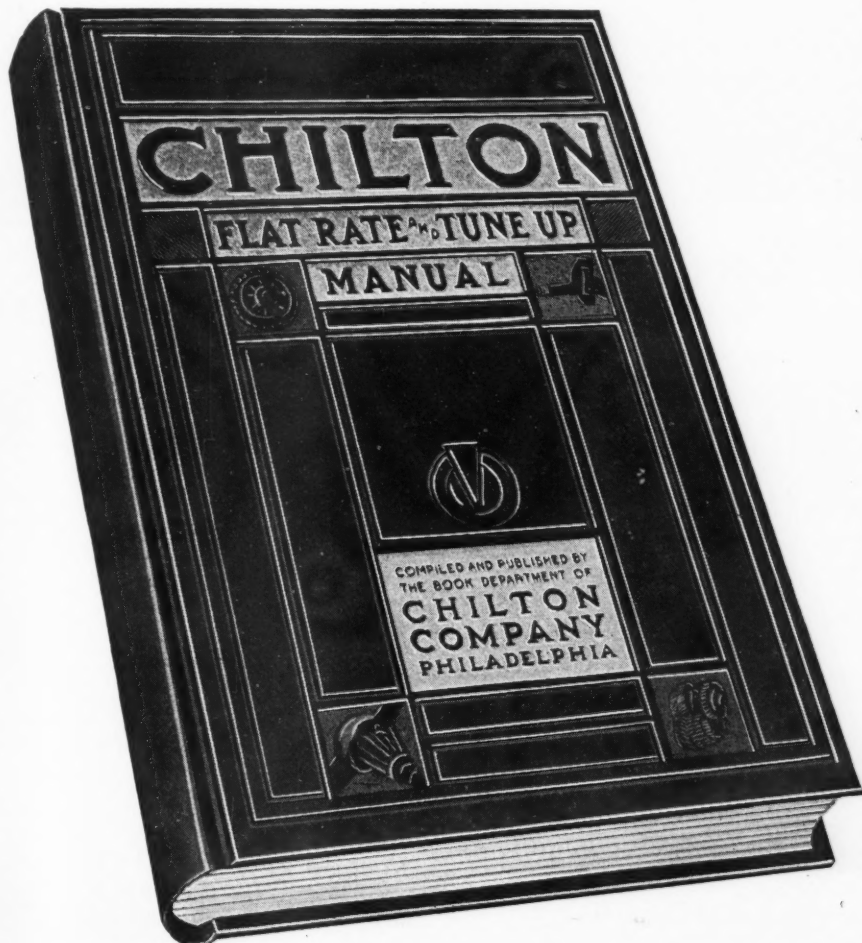
3 MANUALS in ONE

at the same price ~ \$6⁰⁰

CHILTON'S 1940 FLAT RATE

contains:

- A Manual of Flat Rate Labor and Material Prices
- A Manual of Service Procedure on Maintenance, Trouble-Shooting and Tune-Up
- A Manual of Brake Maintenance, Trouble-Shooting and Adjustments



As always—Chilton again leads in value, and new necessary information.

Here's VALUE

the Greatest Chilton ever offered!

- Interchangeability of Truck Units Data
- Completely redesigned Carburetor Section
- Bearing Oil Pressure Tests
- Torque Wrench Readings
- Cause of Brake Trouble—Methods of Correction
- Hydraulic Valve Lifters and Silencers
- More Parts Numbers and Prices. More Body and Frame Parts.

You Will Need

The Chilton Table that shows you the number of makes and models of Trucks that have Interchangeable Parts, and what those parts are, so you can shop around and get the best prices.

The most complete Carburetor Adjustment and Tune-Up Information ever supplied.

For some months now the Trade has requested Bearing Oil Pressure Tests. Here they are. Of great value also will be the Torque Wrench Readings.

Likewise new is the information on Vacuum Advance, which enables you to make a complete check of the types and models of these units in general use.

These are some examples of the new and important features that the Chilton 1940—14th Edition—will bring to you.

The 1940 Manual will bring you the usual Chilton completeness in covering everything needed by repair shops, and the accuracy that has made the Chilton Flat Rate and Service Manual the preferred authority in thousands of independent and car dealer repair shops.

*Wait for The Chilton Man,
or write—Chilton Company, 56th &
Chestnut Streets, Philadelphia, Pa.*

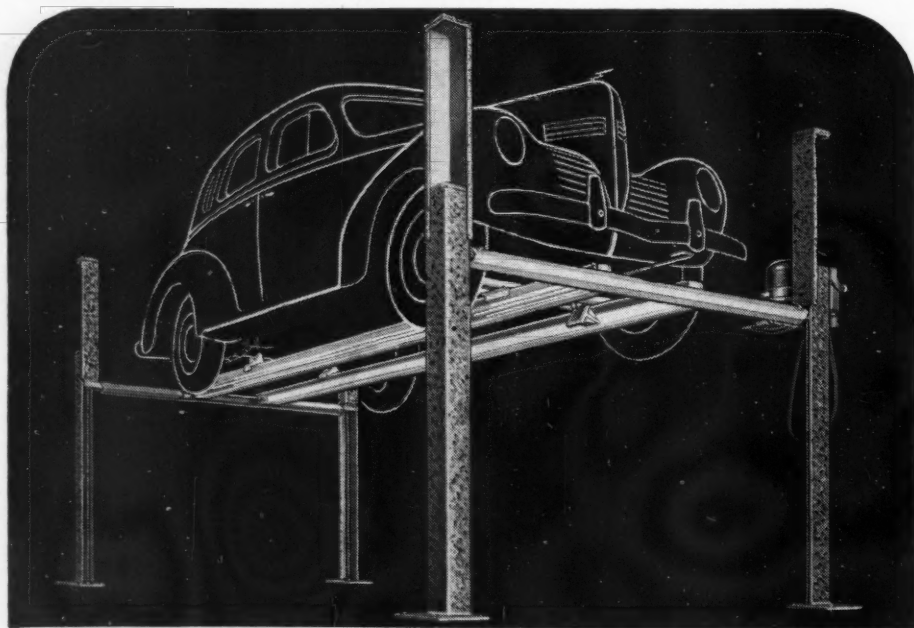
Wheels Inc. Takes Over U.M. Facilities in N.Y.C.

A landmark in New York City—the service department of United Motors Service, Inc., was discontinued last month and the entire service personnel and equipment transferred to the plant of Wheels, Inc., 10 blocks away on 11th Avenue at 54th Street.

John F. Creamer, president of Wheels, Inc., stated that extensive plant alterations had recently been completed to house the many new services involved in this transfer. These

new lines will include, in addition to Bendix products, Delco-Remy Ignition, Delco Batteries and Radios, Harrison Radiators, Delco Shock Absorbers and Guide Sealed Beam Headlamps and Lenses. Wheels, Inc., as part of this new undertaking will also act as a wholesale distributor to sell as well as service these products.

A change in policy on the part of United Motors Service, Inc., has made this transfer possible and henceforth United Motors will function as a warehouse organization in its new quarters now being completed on Van Dam Street in Long Island City.



We're for PAR Economy

Writes the GRAY MOTOR CO.
ROSSVILLE, IND.

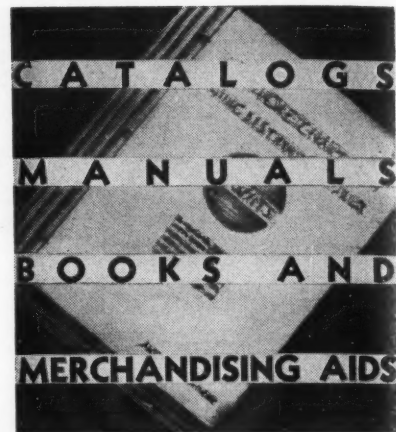
WE HAVE had such wonderful service from our Par Electric Lift that we are writing you to let you know that in the entire two years that our lift has been in service, we have never had one bit of trouble or expense of any kind. We are more than pleased with the Par because it permits us to work at all points underneath the car with no obstruction.

SIGNED

See your jobber or write direct

MODERN EQUIPMENT CORPORATION
DEFIANCE, OHIO

- No pits to dig — no expensive emplacements.
- Positive safety—locks at any height.
- Four-point suspension —no center posts.
- Free-Wheel or drive-on models.



To receive a copy of the free literature mentioned in some of the following items, just check the square on the postcard on page 98 which corresponds to the letter given the literature you desire.

The Toledo Steel Products Co., 3300 Summit St., Toledo, Ohio, has announced a new counter catalog which is said to save considerable time in locating the proper parts and prices. Simplified grouping and classification of parts make it easy to locate an individual item. Prices are listed with the part, making reference to a price list unnecessary. Check "A" on the post card, page 98.

* * *

Bonney Forge & Tool Works, Allentown, Pa., has just issued Catalog No. 140 in handy pocket size. It contains 96 pages illustrating and describing their complete line of hand tools. Check "B" on the post card on page 98 for your copy.

* * *

Containing 120 pages of the latest brake data and specifications, the new CoMaX brake lining catalog BU-43B has been released by The Wagner Electric Corp., 6400 Plymouth Ave., St. Louis, Mo. It is said to be the most complete catalog of its kind ever published by Wagner. Get your copy by checking "C" on post card, page 98.

* * *

An 80-page tune-up manual, giving tune-up information on all cars from 1933 to 1940, has been compiled by The Machined Parts Corporation, 6209 Hamilton Avenue, Detroit, Mich. To get your copy, check "D" on the post card, page 98, and note the make of ignition parts you handle and from whom you purchase them.

* * *

The Fostoria Pressed Steel Corp., Fostoria, Ohio, has a new folder on localized lighting that will be of interest to any one having need for direct lighting for close work. Get your copy by checking "E" on the post card, page 98.

* * *

If you are interested in gas engine driven arc welders, get the new bulletin issued by The Hobart Bros. Co., Troy, Ohio, describing their new "Streamliner" Junior model. Check F.

124B Are you missing a bet? Those extra profits from wheel-balancing would come in mighty handy. Don't miss the HARLEY C. LONEY CO.'s story on L & H WHEEL BALANCING WEIGHTS on page 124. Write direct or check postcard.

124C For the customer who is seeking a logical, economical way to replace worn tires . . . recommend SKINNER RETREADS. The story's on page 124. For further information write or check postcard.

124D Servicemen and motorists alike know that they can depend on VELLUMOID GASKETS. Are you sharing in the profits of the VELLUMOID LINE? It's told on page 124. Write or check postcard.

125A Why give your customers rebuilt when you can install an AIRTEX for the same price and still show a profit? CHEFFORD MASTER MFG. CO., INC. shows the AIRTEX features on page 125. Write or check postcard for details.

125B The CURRAN CORP. offers an effective HOT OR COLD TANK CLEANER for carburetors and fuel pumps in GUNK. Have you stocked your supply yet? See page 125. Write or check postcard.

125C WARNER-PATTERSON offers a FREE PREMIUM with each order of WARNER-PATTERSON PRODUCTS. Don't miss this offer on page 125. For further information write direct or check postcard.

125D Your customers will appreciate this safe low-cost way to clean cooling systems . . . the OAKITE way. Don't miss the story on page 125. It's profitable. Write for details or check postcard.

126A Buy at the sign of the LION! Dependable quality AUTOMOTIVE PARTS, SUPPLIES and ACCESSORIES. See page 126. For further information write direct or check postcard.

126B Here is the horn your customers have been asking about . . . the BUELL. Don't miss the many features of BUELL HORNS told on page 126. For literature write direct or check postcard.

126C NCC-OUT . . . the hose clamp with the thumb screw. See page 128. Write WITTEK MFG. CO. for further facts, or check postcard.

126D Play safe! Use PURITAN, the genuine REFILL BRAKE FLUID that is finding more and more customers every day. It's shown on page 126. Write direct or check postcard for information.

126E Your customers will appreciate the added gas saving they can obtain through your recommendation of BLUE CROWN SPARK PLUGS by MOTOR MASTER PRODUCTS CORP. See page 126. Write or check postcard.

126F For quicker, economic operations . . . try the KELLOGG ONE-END LIFTS and CAR-WASHERS. Your profits will reflect the results. See page 126 for details. For further information write or check postcard.

126G Don't pay more . . . get VALLEY Battery Chargers. See page 126. Write for free bulletins, or check postcard.

126H Transform that single-operation air hose into a multiple-duty unit with a SPEED COUPLER made by ARO EQUIPMENT CORP. It's shown on page 126. Write direct for details or check postcard.

127A Traffic jams will have no terrors or hazards for your customers if you've installed SOUTHERN BRAKE LINING. Have you seen CHARLOTTE SOUTHERN on page 127? Write or check postcard for details.

127B Get that new equipment you need the logical, economical way . . . through COMMERCIAL CREDIT CO.'s "ONE-CONTRACT" AUTOMOTIVE EQUIPMENT PLAN. See page 127. Write for details or check postcard.

127C For unmatched value and leadership GARDINER FLUX-FILLED SOLDERS recognize no superior. Quality workmanship demands quality materials. See page 127. Write for details or check postcard.

127D FITZGERALD GASKETS offer profit opportunities which you've never realized. Stock a supply and watch your gasket sales mount. See page 127. For further details write or check postcard.

127E Your customers will be interested as well as pleased with the efficient "break-up" action of the new KING AIR-OIL MOTOR FLUSHER. The ELECTRIC HEAT CONTROL CO. shows it on page 127. Write for details or check postcard.

127F Your customers realize that only CLEAN oil will give their car the proper service. They'll appreciate your recommending PUROLATOR made by MOTCR IMPROVEMENTS, INC. See page 127. For details write or check postcard.

128A For faster, cleaner, more dependable work on those jobs requiring high tensile strength, quick-acting flux, uniform quality use GARDINER FLUX-FILLED SOLDERS. See page 128. For details write or check postcard.

128B For automobiles, trucks, trailers and buses . . . use TIMKEN BEARINGS. See page 128. For full details write direct, or check postcard.

128C You can't beat this SIGNAL-STAT COMBINATION . . . BURN-OUT PROOF SWITCH and DIRECTIONAL LAMPS. There is the key to increased sales and profits. See page 128. Write or check postcard for details.

128D Your customer's name plates mounted on their cars offer not only profit but also the advertising that will bring in more trade. ADVERTISING SPECIALTIES, INC., show you on page 128. For details write or check postcard.

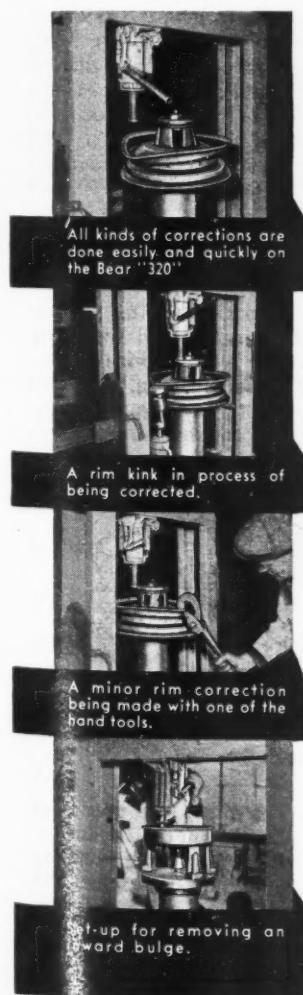
128E The new SPEEDWAY 1/2" No. 89 DRILL will handle that job quicker and more efficiently. See page 128. For further information write or check postcard.

128F The new LINCOLN KLEENSEAL LEVER GUN is one of the most efficient, practical handguns in the business. You'll find a thousand uses for it. It's on page 128. Write for details or check postcard.

128G BALDOR ELECTRIC CO. offers a 2-YEAR GUARANTEE on their new HANDY BATTERY CHARGERS . . . indispensable shop items. See page 128 gives you details. Write direct for BULLETIN 128 or check postcard.

128H When you think of gaskets, oil seals, grease retainers . . . think of VICTOR. See page 128. Write or check postcard for complete details.

129 For that heavy-duty replacement job give your customers the longer life and better mileage of NORMA-HOFFMANN PRECISION ROLLER BEARINGS, shown on page 129. Write direct or check postcard for details.



Only \$450*

*WEST OF ROCKIES SLIGHTLY HIGHER

THE NEW LOW COST BEAR

"320"

**MAKES IT EASIER THAN EVER BEFORE
TO GET INTO THE BIG PROFIT WHEEL
STRAIGHTENING BUSINESS!**

Shops are making up to \$6.00 per hour straightening wheels the Bear Way! Bear is Quicker—Bear is More Accurate—and NOW, in the "320" Model, Bear is so low priced that you can easily buy a wheel straightener out of profits!

BEAR "320" WHEEL AND HUB STRAIGHTENER

There is nothing cheap about this New Model "320" except the price. In fact, the Bear "320" includes features never before offered to repair shops. Wheels are mounted by an improved and faster method—both overhead and portable hydraulic jacks are included—complete assortment of tools enable you to correct wheel distortions including bent rims,

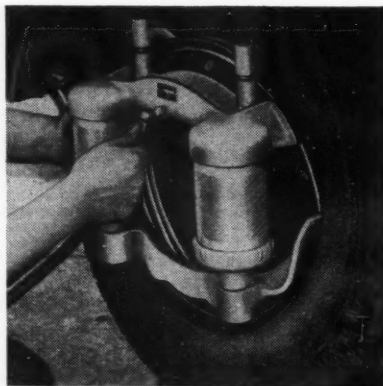
eccentric wheels, bent hubs, etc. Straightens brake drums by new, improved method fast and accurately.

Write now for complete information that will put this low cost, profitable machine to work earning Extra profits in your shop. Bear Mfg. Co., Rock Island, Illinois.



Alemite Tire Mounter

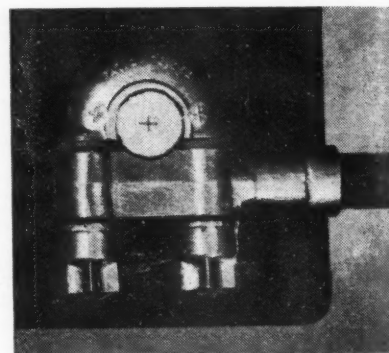
Designed to speed up the job of mounting tires on 15 in. and 16 in. drop center rims, the Stewart-Warner Corp., 1826 Diversey Parkway, Chicago, Ill., has developed the Alemite tire mounter which will be distributed to the trade by Alemite jobbers. The tire mounter operates by compressed air. When air pressure is applied a patented shoe automatically flips the tire bead over the rim, preventing such commonplace accidents as pinched tubes, scuffed white side walls and



strained cords or beads. Designed primarily for use in service stations, tire repair shops and by fleet operators, the Alemite tire mounter is equipped to fit the ordinary air chuck used for tire inflation. It is portable and can be used in any position.

Battery Cable Terminals

A new type of battery cable terminal will soon make its appearance on the market. It is made by The Everkleen Products Co., 1151 South Monterey St., Alhambra, Cal. As illustrated, the terminal consists of a steel U-bolt in a thick casing of lead, with the connector bar cut on the proper arc to complete the circle



formed by the battery post. After the U-bolt nuts have been drawn tight, lead caps are placed over the nuts to protect them from any possible chemical action. It is claimed that these terminals which have been in use for a year show no trace of corrosion.

Portable Wiring Kit

A new portable auto wiring kit that contains both primary and high tension terminals as well as wires is announced by the Belden Mfg. Co., 4689 W. Van Buren St., Chicago, Ill. The new assortment contains 50-ft. spools



of spark plug wire and two grades of primary wire, together with an assortment of primary and high tension terminals and distributor nipples, and the Belden crimpers and cable stripper. All are contained in a compact metal cabinet that is easily carried about the shop.



TOOLS FOR FORD

The K-D Catalog records the development of Ford motors. There are Tools for all models---T, A-B, V-8-85, V-8-60, Mercury and Lincoln-Zephyr---and each is the best for its job! "K-D TOOLS make hard jobs easy!"



K-D MFG. CO. Lancaster Pa.

Ask your jobber about these and other K-D special Tools for Ford. You may also have a copy of our latest catalog by writing direct to us.



► It's a good plan to explain to customers that you can't do your *best* tune-up work unless they use the *best* gasoline—gasoline that will let you advance the spark closest to the point of top power and economy as explained in the chart at the right.

For no matter how well you tune-up an engine mechanically—re-gap spark plugs, adjust valves, clean points, etc.—it can't run any better than the anti-knock quality of the gasoline in the tank permits.

Remember—when customers see what a difference tune-up and good gasoline

make in the performance of their cars, they'll be more than satisfied, and that will mean more repeat business for you.



**THE HIGHER THE
ANTI-KNOCK QUALITY
OF GASOLINE...**



**THE FARTHER YOU CAN
ADVANCE THE SPARK TOWARD
MAXIMUM POWER
(without knock or ping)**



**AND THE BETTER
THE PERFORMANCE
OF THE CAR**

HERE ARE THE SIGNS OF IMPROVED GASOLINE



BETTER—This sign on a pump means that lead (tetraethyl), a liquid, has been added to the gasoline to improve its anti-knock quality. "Leaded" gasoline is sold by dealers throughout the United States and Canada.



BEST—The "Ethyl" emblem means that the gasoline contains enough lead (tetraethyl) for highest anti-knock, so that the engine's spark can be advanced closest to the point of maximum power and economy.

ETHYL GASOLINE CORPORATION, manufacturer of anti-knock fluids used by oil companies to improve gasoline

Tells How Neoprene Is Made

A new sound motion picture produced by Du Pont tells the story of neoprene, a synthetic rubber-like material that is being used to replace natural rubber in products essential to our national well being. This twenty-minute film shows how neoprene is made, explains its chemical formula by means of animated cartoons, shows interesting tests of the material, and pictures hundreds of applications of products made from it.

The material itself, made from coal, limestone, salt and water, can be used wherever rubber is used, but has the

additional advantage of being resistant to cracking from sunlight, ozone and aging. It will not swell or deteriorate rapidly from contact with most vegetable or mineral oils and chemicals, nor will it soften or harden appreciably when exposed to high temperatures. In addition, neoprene will not support combustion.

The motion picture telling this story is available without charge to any organization having available a 16 mm. sound projector. Bookings may be arranged through Rubber Chemicals Division, E. I. du Pont de Nemours & Company, Wilmington, Delaware.



© ART WINBURG

"Borrow Production" to Aid Whiz Retailers After Fire

Fire completely demolished a portion of the facilities of R. M. Hollingshead Corp., Camden, N. J., July 30. The portion destroyed, although affecting a considerable number of manufacturing operations, represented less than 30 per cent of the company's total floor space, a company statement said.

Not affected were the finished stocks of merchandise, the manufacture and filling of dry packaged goods, nor the can manufacturing and lithographed departments. These were housed in a separate plant, known as the company's Cooper River Plant, situated several blocks from the scene of the blaze.

Stewart Hollingshead, vice-president of the corporation, pointed out in a letter that the fire destroyed the plant, after a major explosion, which broke the water main supply of the sprinkler system. Wiped out completely were raw materials, mixing and storage tanks, filling machinery. Total loss was between \$800,000 and \$1,000,000. Known dead, 10; injured, 100 or more. Also complete destruction of 50 odd residences. Insurance coverage is over 100 per cent of the fire loss and includes additional Use and Occupancy Insurance, Hollingshead pointed out.

Arrangements are being made rapidly to produce a full line of Whiz products in other nearby plants, using regular Whiz cans and containers and supervised by Hollingshead chemists, inspectors and division executives.

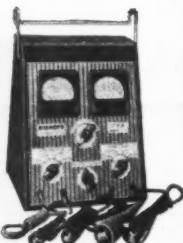
In the meantime, a new plant will be constructed, requiring from 4 to 6 months for its completion, and Whiz customers are assured of service from "borrowed production," Hollingshead said.

Appointments of Eugene B. Powell as regional sales manager of the Pacific Coast area, and Ernest W. Wright, as regional sales manager of the Southwestern area, are announced by Wilson S. Isherwood, general sales manager of the AC Spark Plug division of General Motors. Powell succeeds Charles S. Rogers, resigned, and Wright assumes Powell's former place.

★ GIVE YOUR SHOP A SUPER SERVICE APPEAL WITH NIEHOFF PRECISION INSTRUMENTS

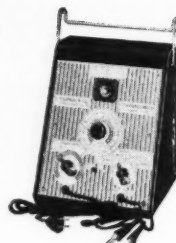
Make your Shop a magnet for Tune-Up business—increase your parts and labor sales—make more profit with Niehoff Precision Instruments. They furnish customers with unbiased proof when new parts and service are needed—they save your time and labor. Complete instructions, merchandising plans and other sales and service helps furnished FREE with every unit.

CONDENSOMETER—MODEL T-17—shows true Condenser value quickly and accurately. Tests capacity and leakage at 450 volts giving breakdown tests that reveal weak or faulty insulation. Power factor test measures resistance of condenser. All condensers can be discharged at end of each test. Two resistance ranges, 0-1000 ohms, and 100-100,000 ohms, provide quick check on radio suppressors or any other resistance you desire to check. Operates on 110-volt A.C. Also Model T-15 for 6-volt D.C. and 110 volt A.C.



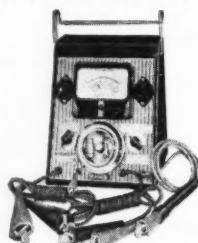
MODEL T-16

CURRENT VOLTAGE RESISTANCE UNIT—MODEL T-16—operates from any car battery. Greatly simplifies all generator, regular and relay adjustments. Accurately checks generator charging rates, field currents, regulators and relays. Quickly detects high resistance connections. Indicates all load readings. Has Double-scale Volt Meter dial calibrated 0-10 and 0-20 volts—Double scale Ammeter calibrated 0-30 and 0-60 amperes. Ammeter Circuit and switches have less than 1/100 ohm resistance, to assure correct reading and adjustments.



MODEL T-17

COILOMETER—MODEL T-18—tests coils on or off the car. Accurately detects shorted turns and faulty coil insulation. Pre-heats coils. Shows coil output on large, easy-to-read dial for comparing coils. 12-volt coils may be tested off the car. Also shows current at spark plugs and detects loss in cap, rotor and high tension wires. Dial has 0-10 volt D.C. scale for all general voltage tests. Equipped with speed governed Breaker Point Motor. Operates from any car or 6-volt battery.



MODEL T-18

CAM ANGLE METER—MODEL T-19—reveals distributor troubles and greatly simplifies point adjustment. It indicates point setting at any engine speed and enables mechanic to space points accurately in a few seconds without feeler gauges. In addition, it detects point lag and bounce, worn centrifugal and vacuum spark controls, and shows worn shaft bushings or bent shafts. Only 2 connections are necessary and car wiring is not disturbed. Operates on 6 and 12-volt systems.



MODEL T-19

★ All Instruments have attractive, etched Aluminum Panel with prominent switch and scale markings—also Grade "A" Meters with accurate, uniform scale distribution.

Ask your Jobber's Salesman TODAY
or write direct for full information.

BRANCH: 1342 S. FLOWER ST., LOS ANGELES, CAL.

C.E. NIEHOFF & CO • 4919 LAWRENCE AVE. CHICAGO, ILL.

"VOTE FOR VALVOLINE"

A GREAT NEW "MONEY-BACK" SELLING CAMPAIGN
THAT PUTS YOU IN THE ELECTION SPOTLIGHT

TIE IN WITH THIS "VOTE FOR VALVOLINE" BUSINESS-GETTING PLAN

- Put your business in the spotlight with this sizzling sales-promotion campaign timed to cash in on the big election.

It's VOTE FOR VALVOLINE—the only candidate that guarantees satisfaction or money back.

Giant banners, colorful posters and window-streamers, beautiful displays, jumbo campaign badges, ballots and registration certificates—all free—put the campaign "oomph" into your business.

Thoroughly pre-tested for pulling power, the "Vote for Valvoline" Campaign will bring in many a new face, up your unit oil sales, increase fall changeovers and mark you as an "on-your-toes" merchant.

Hop on the Valvoline Bandwagon...

WRITE TODAY!

VALVOLINE OIL COMPANY
540 East Fifth Street • Cincinnati, Ohio
Refineries in Pennsylvania



FEDERAL INTRODUCES NEW 1½-2½ TON MODEL

The addition of a new chassis to the Federal line—Model 16—with a nominal rating of 1½-2½ tons and a gross rating of 13,000 lbs., was the first announcement to be made by T. R. Lippard, new president of the Federal Motor Truck Company. Featuring a 232 cu. in. engine and an 8½ in. frame, this new chassis carries a base price of \$695 f.o.b. factory.

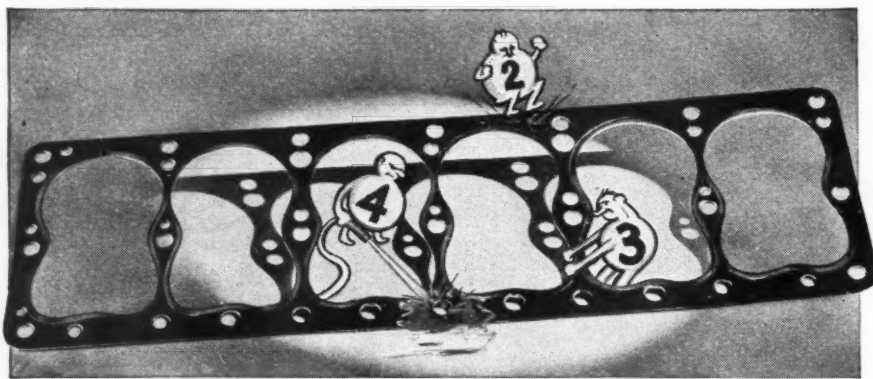
The Model 16 is powered with a Hercules heavy duty 6-cylinder, L-head engine with a bore and stroke of

3-13/32 in. x 4¼ in., developing a maximum of 75 hp. Maximum torque is 164 ft. lbs. at 1200 r.p.m. A heavy 2½-in. diameter crankshaft with "Tocco" electrically hardened bearing surfaces is supported by seven main bearings having a total area of 85 square inches.

Other features of the engine include 3-point rubber mounting, light weight aluminum pistons, valve seat inserts, vacuum type crankcase ventilator, full length water jackets and

gear-driven water pump. Completing the unit power plant is a Borg & Beck 10-in. single dry plate clutch and a 4-speed transmission.

The frame is 8½ in. deep. Axles are Timken, the rear being of the full-floating bevel gear type. Front springs are 38 in. long by 2½ in. wide, and rear springs are 50 in. long by 2½ in. wide. All spring and chassis pins float in compressed rubber bushings, and no lubrication is ever required at these points. Lockheed hydraulic brakes 14 in. diameter by 2 in. wide front, and 16 in. by 2¼ in. wide rear, operate in cast alloy iron brake drums. Wheels are cast steel spoke type with demountable rims. Six wheelbase lengths are available as follows: 135 in., 146 in., 155 in., 167 in., 180 in., 194 in.



Before You Say—"They're All Alike"

LOOK INTO

FEL-PRO GASKETS

PUMP PACKING and GREASE RETAINERS

Gaskets may look alike... But—It's performance that must win car owner good-will, satisfy their requirements and bring in steady repeat business for you.

These are the FEL-PRO Gasket features that have won unqualified dealer approval!

- 1 Super-resilient—they seal without distortion.
- 2 Soft-Faced—conform to irregularities yet resiliency is confined to outer surfaces where it is needed.
- 3 Steel Center furnishes extra strength... assures uniform thickness and compressibility.
- 4 Special FEL-PRO Cement—prevents seepage between plys... assures a single bonded unit that is heat-proof and water-proof.
- 5 Uniform Construction—every FEL-PRO Gasket is built to meet today's high speed, high temperature and high compression requirements.

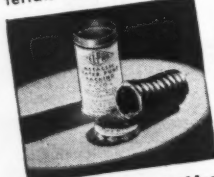
Every FEL-PRO Product Embodies Distinctive Sales and Profit Making Features. Write for New Catalog and Confidential Distributor's Proposal. Address:

FELT PRODUCTS MFG. CO., 1510 W. Carroll Ave., Chicago



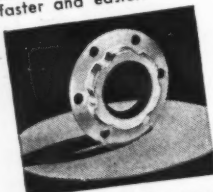
FEL-PRO Gasket Sets

A complete line... many types of materials for every job.



FEL-PRO Pump Packing

Fits flush at once... makes installation faster and easier.



FEL-PRO Grease Retainers

Easily installed... no special fitting... accurate on all cars.



Firestone Turns Its 40th Year

The 40th anniversary of the founding of The Firestone Tire & Rubber Company by Harvey S. Firestone was celebrated Aug. 3 when the company turned over the entire facilities of its factory at the New York World's Fair to the production of tires of synthetic rubber.

Reviewing the 40-year span of the company's existence, Harvey S. Firestone, Jr., vice-president, cited a number of other important contributions to the rubber industry, beginning with the development and production of the first straight-side tire in 1904. Three years later, Firestone became the first manufacturer to design and build a tire with an all-rubber non-skid tread. In 1916 the company introduced its Gum-Dipping process.

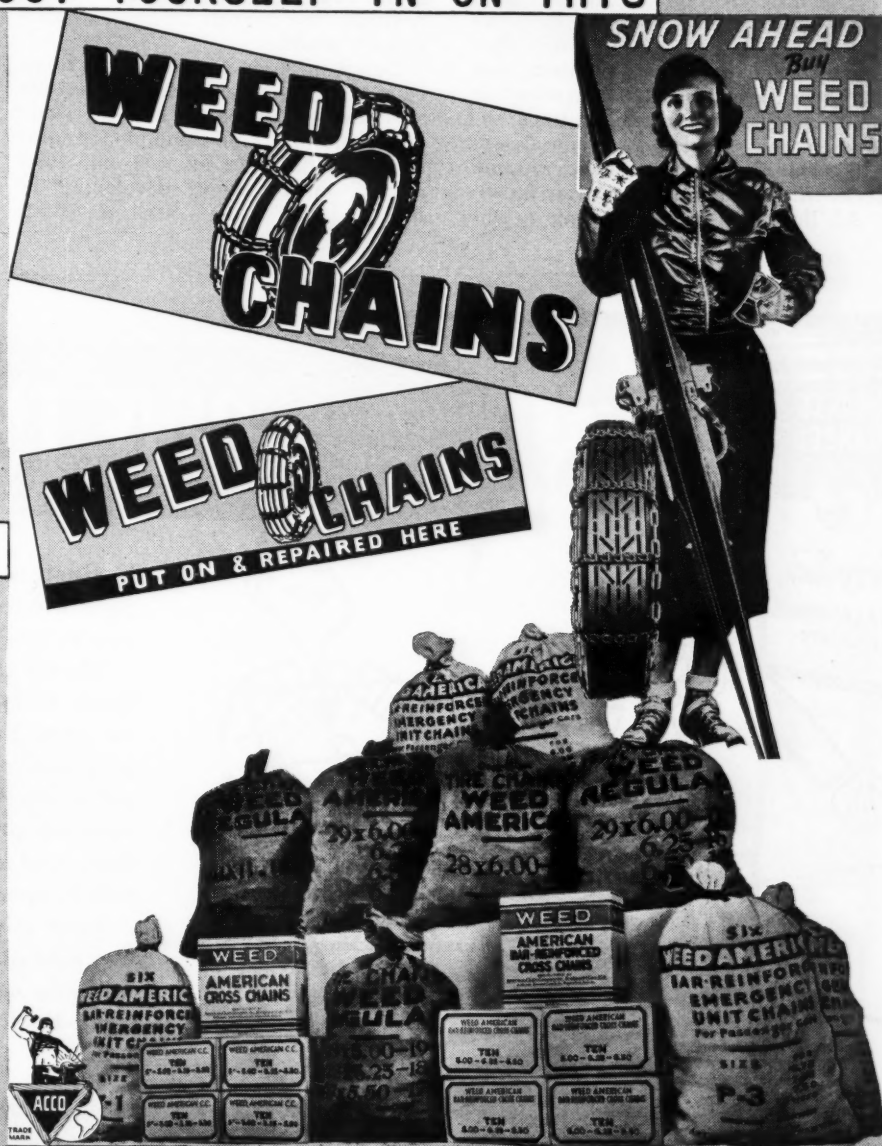
"While general improvement in tire construction was recorded each year," said Firestone, "one of the company's most important contributions came in 1923 when it introduced the first balloon tire. Prior to this, tires required air pressures of 55 and 60 lb. in order to insure satisfactory performance. Today, specified tire pressures range from 25 to 30 lb.

"Eight years ago, my father introduced the first practical low-pressure pneumatic tire for farm tractors. At that time, farm-wheeled implements were operated on steel tires. It is estimated that more than 85 per cent of all tractors manufactured this year will roll off the assembly line on rubber tires. Rubber tires on tractors effect a saving of 33 1/3 per cent in fuel and 25 per cent in time.

"In 1934, after a period of experimental work, Firestone produced its first tire of synthetic rubber. Since that time we have carried on a steady experimental program in order to be ready for any contingency that might arise to jeopardize the nation's sources of natural rubber supply."

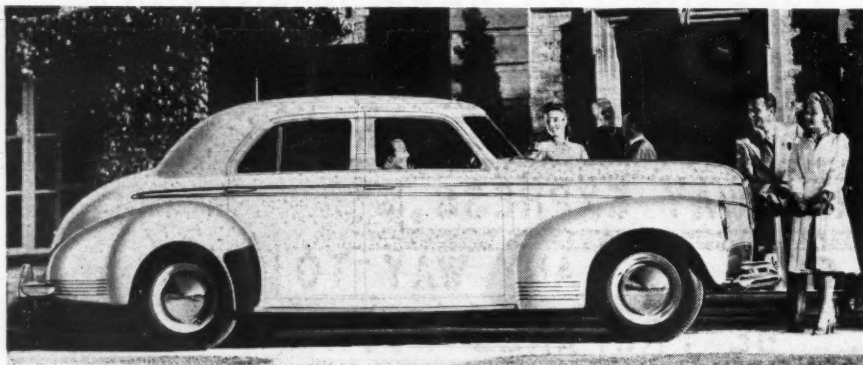
REMEMBER LAST WINTER? WE DO BECAUSE DEALERS IN MANY LOCALITIES TELEGRAPHED OR TELEPHONED THEIR JOBBERS FOR WEED AMERICAN BAR-REINFORCED TIRE CHAINS AFTER THEIR SMALL STOCKS WERE SOLD OUT. CHAINS WERE SHIPPED BY RAILWAY EXPRESS, TRUCK AND PARCEL POST.... ANY WAY TO GET THEM THROUGH. BE PREPARED WITH A REPRESENTATIVE STOCK OF WEED SIZES. EASIEST WAY TO CUT YOURSELF IN ON THIS

IS WITH WEED CHAIN PROFIT PACK. ASK FOR WEED CHAIN DISPLAY MATERIAL. IT WILL SELL FOR YOU. NATIONAL ADVERTISING WILL TELL PEOPLE TO LOOK FOR THE WEED CHAIN SNOW GIRL. SIGN UP WITH YOUR WEED JOBBER SALESMAN....



AMERICAN CHAIN & CABLE CO., INC.
YORK, PENNSYLVANIA

STUDEBAKER ANNOUNCES 1941 MODELS



FEATURING the Land Cruiser model, Studebaker enters the 1941 market with three lines of cars: the Champion, the Commander and the President. New slip-stream styling by Raymond Loewy characterizes all three lines, with a wide selection of body styles, color combinations, including the popular two-tone finish, a liberal use of plastic and chrome trim, with harmonizing interior finish.

All lines are wider and longer, and

are without running boards. Dual body mouldings, wide apart at the front and merging at the rear, accentuate the overall length and slip-stream styling.

Detail mechanical changes have resulted in higher engine output, smoother performance and increased acceleration. The Champion engine is a 6-cylinder, 3 in. x 4 in., 169.6 cu. in. displacement, developing 80 h.p. at 4000 r.p.m., with a 6.5 to

1 compression ratio. Outstanding among mechanical improvements is the addition of an automatic choke.

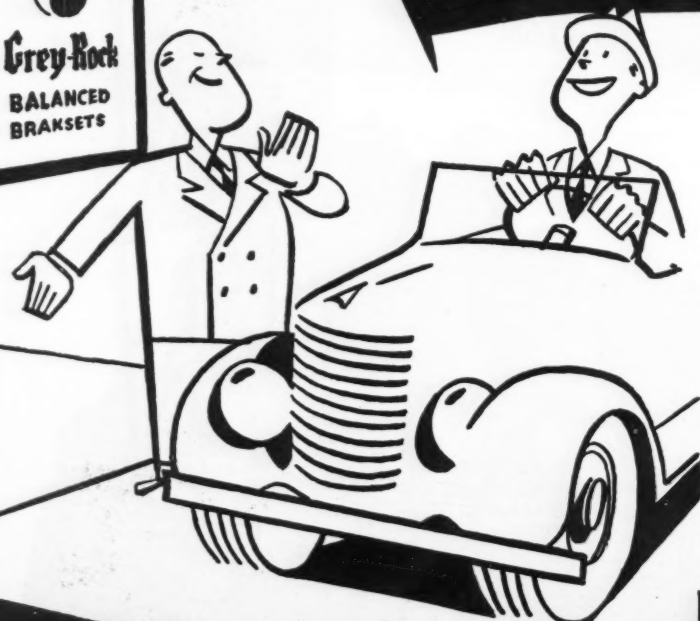
The Commander engine is the same size as the 1940 model, 3 5/16 in. x 4 1/4 in., 226.2 cu. in. displacement, but an increase in the compression ratio to 6.5 to 1 has resulted in an increase in output to 94 h.p. at 3600 as compared to 90 h.p. last year. The wheelbase is 119 in.

The 8-cylinder President engine is the same size as the 1940 model, 3 1/16 in. x 4 1/4 in., with 250 cu. in. displacement, but the increase in compression ratio to 6.5 to 1 gives an output of 117 h.p. at 4000 r.p.m. Wheelbase is 124 1/2 in.

The Champion line offers coupe, club sedan and cruising sedan body styles, with custom, custom deluxe and deluxe-tone models of each. The Commander and President lines offer the conventional 4-door, 3-window sedan, and the Land Cruiser, which is a 4-door, 2-window sedan, with custom and deluxe-tone models of each.

All models are designed to accommodate the Studebaker "climatizer."

GIVE THE MOTORIST



● Business can be a very pleasant thing—when your customer is getting a real bargain while you're making a real profit.

That's the situation when you install Grey-Rock Balanced Braksets. Your motorist gets an even brake—smooth, balanced, sure stopping power with extra miles of service. And you get a worthwhile mark-up on a nationally advertised product, freedom from gyp competition, and assurance that your mechanic's time will be spent to advantage.

Your advertising helps, your right to Kamway and other equipment, and your Grey-Rock jobber's service are all plus-values. Ask that Grey-Rock jobber about the proposition.

Grey-Rock

WALTER P. CHRYSLER

Walter Percy Chrysler, chairman of the board of Chrysler Corp., one-time locomotive wiper who became one of America's great automobile men, died August 18 of a cerebral hemorrhage at his Long Island, N. Y., home. He had been seriously ill for two years. He was 65.

Grandson of a covered wagon man, son of a railroad engineer, Chrysler got his first job as a sweeper in the Union Pacific Railroad shops in Ellis, Kansas. He rose quickly from apprentice to roundhouse foreman. At 28, he became general foreman of the Colorado & Southern shops in Trinidad, Col. In 1908, he was made Superintendent of Motive Power of the Chicago Great Western.

That same year, he bought his first automobile. He purchased a Locomobile for \$5,000, \$4,300 of which he had borrowed, to study, to take apart and put together again many times.

Charles W. Nash, then president of Buick Motor Co., hired Chrysler as works manager for Buick in 1912. Buick produced about 45 cars a day, then. When Chrysler left Buick

seven years later production averaged 550 cars a day. In 1916, Chrysler became president and general manager of Buick and in 1919, first vice-president of General Motors Corp. in charge of operations.

Later that year, he resigned and went to Europe on an extended vacation. He intended to retire, although only 45 years old. However, in 1920 he became executive vice-president and general manager of Willys-Overland Co. In August, 1920, he was asked to undertake the reorganization of the Maxwell Motor Co., which was on the verge of bankruptcy. He accepted this new work at the same time that he was rehabilitating the Willys-Overland Co.

A reorganization committee purchased the assets of the Maxwell-Chalmers Motors Co. and a new company, the Maxwell Motor Corp., was formed. Chrysler was president. In 1924, the first car to bear the Chrysler name appeared on the market. Success was immediate and in one year, 32,000 were sold at a retail value of \$50,000,000.



On June 16, 1925, the Chrysler Corp. was formed, succeeding the Maxwell corporation, and Chrysler became its president and chairman of

(Continued on page 124)

AN EVEN BRAKE WITH Grey-Rock



Advertised to the 50,000,000 audience of four great weekly magazines, and fitted by Kam-way, the only shoe-rearing equipment—Grey-Rock Balanced Braksets are easily sold and quickly installed.

Wall-mounted brake-service display, concentrated sales story on your business, and complete servicing and relining chart—that's the triple advantage of this big chart, available from Grey-Rock Jobbers.



BALANCED BRAKSETS

UNITED STATES ASBESTOS DIVISION
of Raybestos-Manhattan, Inc., MANHEIM, PA.
BRAKE LININGS • CLUTCH FACINGS • FAN BELTS
HOSE • PACKINGS • RELINING EQUIPMENT

Thermoid Sales Meetings

A meeting of Thermoid's automotive replacement sales organization in the New England, New York and Southeastern Divisions was held at the Thermoid Plant in Trenton during the week of August 5. The meeting was conducted by Charles A. Klaus, Thermoid's chief sales engineer; W. E. Harvey, vice president; R. W. Case, Jr., advertising manager, and H. T. Sheckler, sales service manager.

Similar one-week meetings for other divisions of the Thermoid Sales

organization were held, starting in Chicago August 12, in Dallas August 19, and in Los Angeles August 26.

Spanish-English

Automotive Dictionary

G. E. Stechert & Co., New York, publishers, have introduced a new English-Spanish Automotive Dictionary containing all recent technical terms now used in the American and British automobile industries with their corresponding Spanish translations.



"The master says he's down by the
bridle path and send a taxi!"

Lessons in Welding

The Lincoln Electric Co., 12818 Coit Road, Cleveland, Ohio, has recently published a book called "Lessons in Welding." It contains a series of 51 lessons, presenting in concise manner fundamental facts of welding. The lessons are grouped in four principal sections: welding with unshielded arc electrodes; welding with shielded arc electrodes; electrodes for particular joints and metals; hardfacing. The book is intended not only for beginners but for experienced welders. Price is 50 cents per copy in the U. S. A.

New Sales Technique

"Selling through the nose" by the Curran Corporation, Malden, Mass., has proved to be a progressive step in modern salesmanship.

To demonstrate the smell of the 1940 alkyl phenolic GUNK which, according to A. F. Curran, development chemist, is "characteristic of health soap or phenol and suggests cleanliness," a substantial whiff of GUNK will be mailed along with the new literature to any interested parties who care to write direct to the corporation.

Correct Address

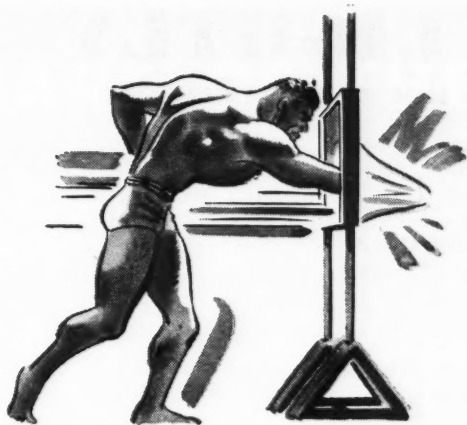
It has been called to our attention, that in the August issue of MOTOR AGE the address of the new headquarters of the Signal-Stat Corp. was given as 28 Jay Street, Brooklyn, N. Y. The correct address is 68 Jay Street.

For Better Performance

The New
DOLE *Motor Block Adjustable*
THERMOSTAT

Replacement thermostats for installation after 10,000 miles now become a big profit item. They belong in all automotive outlets able to command worn moving part with a new and improved model. Thousands of new sales at \$1 to \$2. DOLE BRINGS THE INDUSTRY a replacement thermostat that's adjustable! A summer range prevents "automotive fever," valve and ring varnish, etc.—a winter range prevents sluggishness, sludge and all the evils of automotive chills. Also adjustable to types of anti-freeze. Jobbers and dealers all cash in from selling Dole adjustables as a preventive for chills and fever—Dole Hose-efficiency.

THE DOLE VALVE COMPANY
1901-41 Carroll Ave., Chicago, Ill.
Offices and Representatives in
all principal cities



Kid Jones is Nearly as Tough as L·O·F Hi-Test Plastic

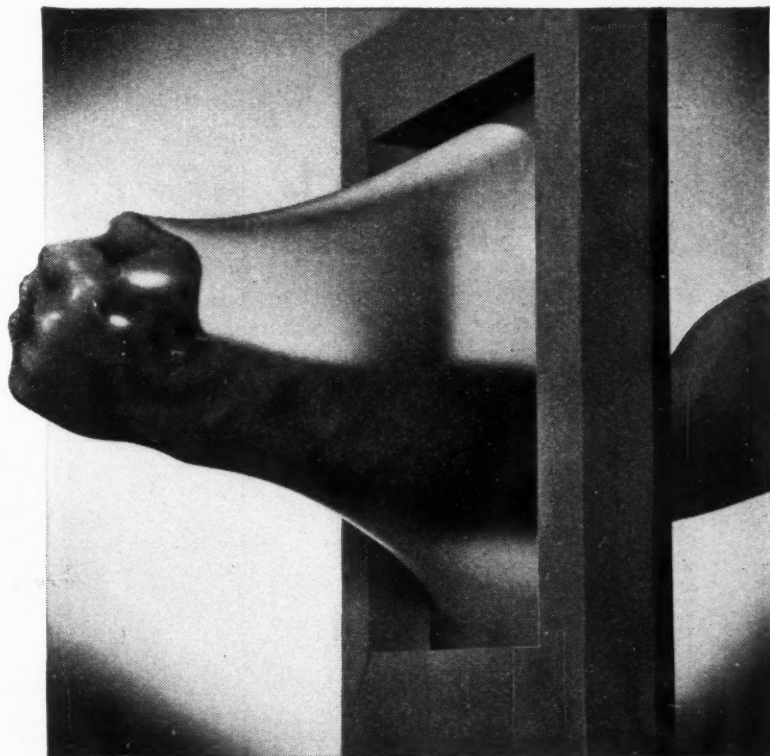
● For any "Kid Jones", that's high praise indeed. This plastic—that's the safety "meat" in the safety glass "sandwich"—is so tough that a real slugger can use it for a punching bag, and he can't drive his fist through.

When this tough plastic is laminated with two pieces of thin glass into L·O·F Hi-Test Safety Glass, you have the safest medium of vision yet manufactured for motorcars.

The use of this new plastic—the culmination of constant, progressive improvement of the laminating process—has made glass one of the safest safety factors in the modern motorcar.

The welcome acceptance of this better glass; its use in larger window areas; plus the fact that thin plate glass is laminated into L·O·F Hi-Test Safety *Plate* Glass to afford clearer vision without distortion—these are important factors of safety in the automobiles of 1940 and 1941.

For new cars and for replacements make sure you have this better glass. Then you are giving your customers the best there is in safety glass and comfort. Libbey-Owens-Ford Glass Company, Toledo, Ohio.



LIBBEY · OWENS · FORD

HI-TEST SAFETY PLATE GLASS

ONCE OVER LIGHTLY

By DOC CHUCKLEFORD

ONE of our readers tells us about the absent-minded professor down in Albuquerque, who hurried out of school late for an appointment, only to find that his car had a flat tire. He called the repairman and anxiously

paced the sidewalk while the change was made. The tire fixed, he climbed in but his keys wouldn't fit. The answer was, it just wasn't his car at all. His thunderbolt was parked immediately behind.



Fellow told us the other day about a jobber's salesman who is pushing

oil filters. He comes into your place and with that characteristic grin, he says, "My Frams!" Wears a Willkie button, too.

We always figure there are only two kinds of drivers—Reckless and Wreckless.

Lost \$10,000 last month. Laid it down in the proof-room and forgot to pick it up when it came time to present those figures on "Small Shop's 1939 Earnings" which appeared on page 27 of August, MOTOR AGE. Seems that when you added those figures up, they were exactly \$10,000 shy. Anyway, here are the correct figures, with apologies to all and sundry who wrote in, to wit, "What the hell did you do with the 10,000 bucks?"

Small shop's 1939 Earnings

Gasoline	\$11,125.22
Oil	626.22
Labor	934.05
Tire & Tubes	945.36
Parts & Accessories	2,746.29
Batteries	1,133.65

Gross earnings \$17,510.79

Break-down starting, lighting and ignition (included in above figures)

150 Batteries	\$1,133.65
286 Cables	301.16
Starter & Generator—	
Labor	\$934.35
Starter & Generator—	
Parts	689.71

Gallorage

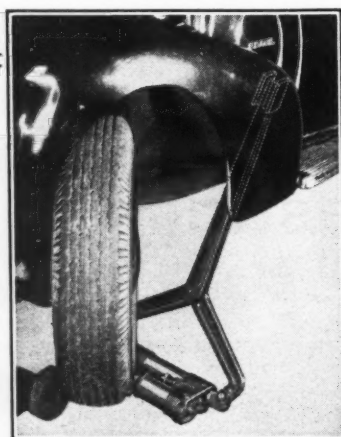
Gasoline	74,696 gals.
Oil	3,069 qts.

That was the story about Chuck Held and his successful electrical service station. Chuck has his customers pretty well sold on his ability. Once, one of his regulars got into trouble on the ferry between Camden, N. J. and Philly. Couldn't get the

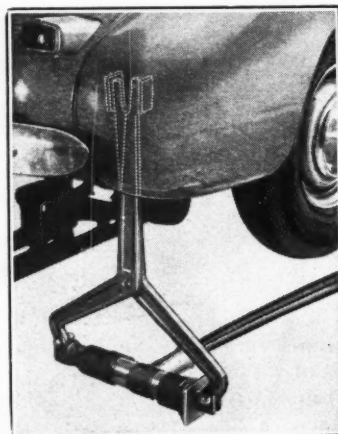


doggone car going. But the customer wouldn't let anybody but Chuck touch it. He rode back and forth, back and forth on the ferry boat, for over an hour, before Chuck got there and fixed things.

If you have a lull in your life, write Doc Chuckleford. In other words, if something funny has happened to you and you want the world to know it, shoot it to us. We'll put it in our corn sheller and see what comes out.



YOU CAN'T AFFORD
TO BE WITHOUT
The New H 289
Perfection Power Plus



UNIVERSAL FENDER SPREADER

Universal operation on ALL hydraulic body jacks with 1 1/4" pipe fittings.

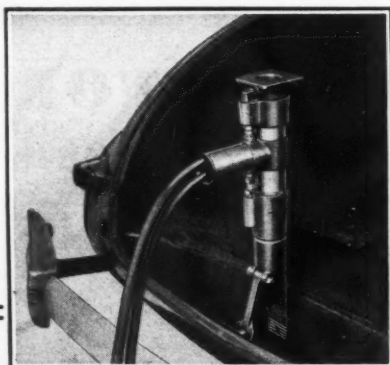
IT pays for itself on the first half dozen jobs on the modern deep construction fenders. Ideal for close work where wide spreading is necessary. Fills a long felt need for spreading between fender and fender well. Closes to 1 3/4" and opens to 19 3/4" with 6" ram travel.

Models H-289 Price \$12.50

H-80 Perfection Power - Plus Push - Pull Spreader. (For use only with Perfection Push-Pull Jack.) Power in a small area. Ideal for trunks, pushing out sills, etc. Will fit into 1" space. Open width 5 1/2".

Price \$8.50.

Order at once through your jobber.



G. A. C. Mfg. Co.
Ashland, Ohio

THE HEART OF THE HARVARD

Will Make Sales for You



THIS is the Harvard, a recently designed combat training ship that's making aviation history. Hidden in the vitals of this sleek war weapon is a storage battery—a Gould. The specifications were tough. Gould met them with something to spare.

Add to your sales kit another outstanding installation by Gould! Put it with the 70 utilities, the 55 railroads, the scores of Gould achievements in other fields that help sell automobile batteries. Be a Gould dealer—enjoy a complete line of batteries, priced to compete and backed by a plan that pushes the better, more profitable types.

Write for free folder describing Gould merchandising helps. Gould Storage Battery Corp., Dept. F34, Depew, N. Y.

KATHANODE PRICES REDUCED!

New, 27-month Kathanode brings this great name to Gould at competitive price. Also, new low price on 36-month Kathanode!



GOULD BATTERIES



IT'S EASIER TO
SELL THE
BATTERY PICKED
BY ENGINEERS



Government Contract Awarded Willard

A United States Government contract for storage batteries, estimated to total between \$400,000 and \$500,000, has been awarded to the Willard Storage Battery Co., it was announced last month.

The contract, placed by the Procurement Division of the Treasury Department, is for automotive batteries, exclusively. They will be placed in use throughout the country in the vehicles of such governmental agen-

cies as the CCC, WPA, Post Office Department, Department of Agriculture, Justice Department, Army, etc.

Whiz Advertising to LeQuatte

R. M. Hollingshead Corp., Camden, N. J., which last year appointed H. B. LeQuatte, Inc., to handle the advertising of Whiz Self-Polishing Floor Wax and other products of its Household division, has now appointed that agency to direct the advertising of the company's entire line of Whiz products, including all automotive products, Motor Rythm and Venus.

Federal-Mogul Earnings Up

Reflecting the steadily increasing sales of engine bearings, a recent report of the Federal-Mogul Corp., Detroit, shows that a net profit of \$361,668.55 was earned in the first six months of this year. This is equal to \$1.29 per share, an increase of over 26 per cent compared with the first six months of 1939—which was one of the best periods in the company's history—an indication of strong and profitable growth.

About Price Cutting

Maybe you've seen this before or have figured it out for yourself. Anyway, Automotive Trade Assn. of Kansas City figures that in order to retain the same gross profit a cut of—

5%	requires	12 3/8%	More Volume
8%	requires	25%	More Volume
10%	requires	50%	More Volume
12 1/2%	requires	75%	More Volume
15%	requires	112 1/2%	More Volume

These figures apply to any business where the gross margin is 25 per cent. Incidentally, that's about what the margin on gasoline would be at 4 cents gross per gallon.

Anyway, it's something to think about these hot days when business is none too rushing, says A.T.A. of Kansas City.

Ad Clinics At N.I.A.A. Meeting

Marketing problems of industry will be threshed out at ten three-hour clinics which will be staged at Hotel Statler, Detroit, during the three-day Conference of the National Industrial Advertisers Assn., Sept. 18-20. Demands of NIAA members throughout the country for more time at annual meetings for serious discussions of basic advertising topics and marketing aids brought about the scheduling of these sessions as the backbone of the entire Conference program, according to the program chairman, Phillip Ruprecht of McGraw-Hill Publishing Co., General Motors Bldg., Detroit.

The clinics will supplement two general sessions at which NIAA members, guests from affiliate advertising organizations and business executives will study industry-wide advertising problems, especially those which have gained importance since the acceleration of national defense plans.

Wolfe Heads N. C. Assn.

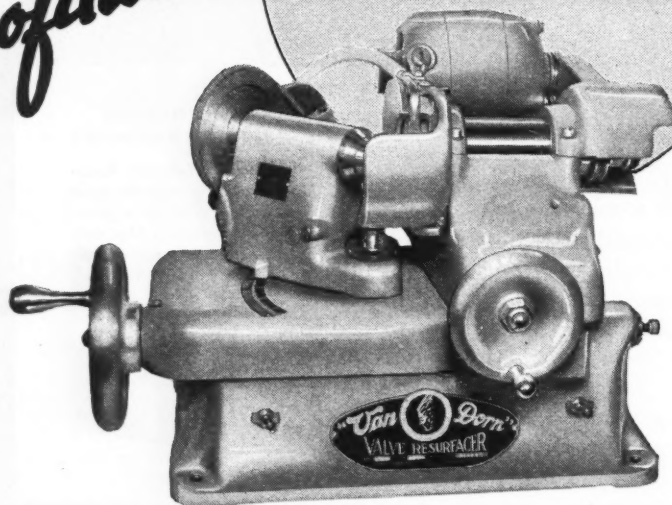
North Carolina Automobile Dealers Assn. at its sixth annual convention at Blowing Rock, N. C., elected T. R. Wolfe of Albermarle, as its new president and selected Asheville as the site for the 1941 convention.

Wolfe succeeds J. T. Maloney, of Fayetteville. Other officers elected by the association were: W. J. Hoover of Raleigh, vice-president; R. L. Sholar of Whiteville, secretary; and J. B. Dancy of Durham, treasurer.

*Accurate
Speedy
Profitable*

**Only \$8.00
a month**

**PUTS THIS VAN DORN
VALVE RESURFACER
IN YOUR SHOP!**



By substituting the precision-built Van Dorn Valve Resurfacer for slower, less accurate old-fashioned methods, you make valve refacing an E-A-S-Y job. Work gets done faster—with absolute accuracy—more profit.

Van Dorn's Wet Grinding Valve Resurfacer takes valve stems from 9/32" to 11/16"—any angle from 30° to 90°. Handles car, truck, bus, tractor or Diesel motors.

Solidly-built with three electric motors to drive workhead, valve spindles and electric pump, you've got ample power in this Van Dorn machine to put the smoothest, shiniest finish you've ever seen on a valve face.

Ask your Van Dorn Jobber or write Van Dorn Electric Tools, 727 Joppa Road, Towson, Maryland.

"Van Dorn"
(DIV. OF BLACK & DECKER MFG. CO.)

THE "RED HEADED" PORTABLE ELECTRIC TOOLS

CHECK CONDENSERS.

(Continued from page 37)

other side of the secondary winding *G*, is grounded to the primary.

In Fig. 2, the battery current (with switch closed) flows through the coil primary to the breaker points and back to the battery by way of the ground *J*.

This flow of current builds up magnetic lines of force in the coil which collapse when the contact or breaker points open. The self induced current charges the condenser to positive and negative since the breaker points are open and the current, therefore, has no other place to go. The condenser absorbs or stores the current when the flow is suddenly interrupted by the opening of the breaker points. By thus absorbing this current the condenser performs two important things.

First, it prevents the natural tendency of the current to arc across the open breaker points. Whenever any two cables conducting current, such as the ordinary house current, are suddenly broken or pulled apart there is a spark at the point of breakage. This same tendency of the current to continue is found in the primary system when the breaker points separate. As a matter of fact it is more pronounced with breaker points because of the driving force of the ignition coil. The condenser by getting rid of the arc prevents burning of the points and, in addition, causes a more sudden break in the primary current which is so necessary to induce a high voltage in the secondary of the coil.

Secondly, the condenser in building up a voltage far above that of the battery and which when discharged back through the primary in opposite direction to the battery voltage, causes a fast collapse of the core magnetism. This voltage being opposed to the voltage at the breaker points reverses or neutralizes the primary coil or voltage with the result that the battery current is thus instantly cut off. The magnetic field dies out instantly and the lines of force then cut the secondary coils of wire with sufficient speed to produce a high voltage current needed to jump the gap at the spark plugs.

Ignition condensers in general are made up of foil, paper and hallowax, enclosed in a metal shell. Usually the paper and foil consist of long strips rolled together, with the paper insulation between the foil. The paper is known as the dielectric. Usually there are two sheets of foil *A*, Fig. 3, and four sheets of paper, *B*, rolled into a size to fit a metal shell. This shell is usually mounted inside of the distributor or in some cases on the outside.

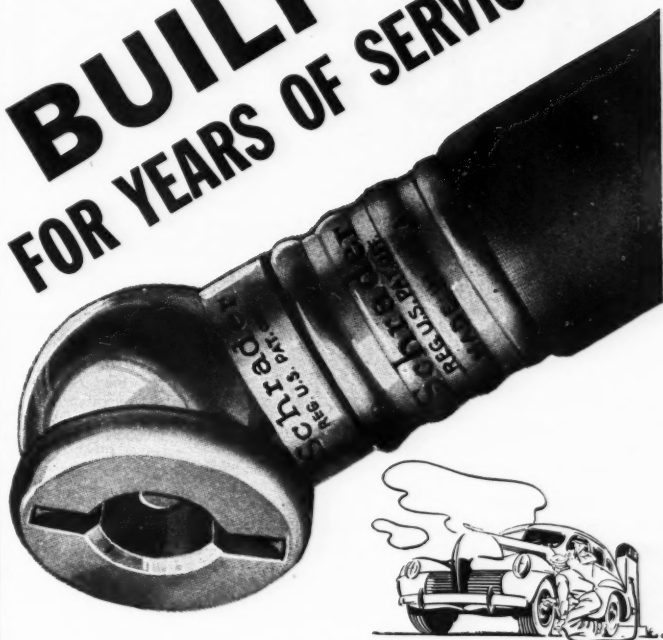
The two strips of foil *A*, Fig. 3, do not touch each other and one is connected to the terminal *C*, Fig. 4, while the other roll of foil is connected to terminal *D*, Fig. 4. The assembly is then mounted in a shell *E*, Fig. 5, with the shell acting as one terminal and *F* as the other. Most mechanics are familiar with the fact that the condenser is usually grounded to the distributor by two screws in the lug on the shell. The other terminal *F*, usually fastens to the breaker arm.

Previously in this article it was stated that the condenser absorbs the current when the flow of the primary is suddenly interrupted by opening the breaker points. This brings up the point that a condenser must have the proper capacity. It must not be of too little capacity nor must it have too great a capacity for the job. The capacity depends upon the amount of foil in it. The unit of capacity is the farad, but this is a large unit and for classifying ignition condenser capacity the term, microfarad is used. This is usually given as MFD and expresses the capacity in millionths of a farad. Most of the condensers used for automotive work have capacities between .22 and .40 MFD.

As is usually the case with all automotive design the condenser furnished with the ignition system of a motor vehicle has been chosen by the manufacturer and the manufacturer of the electrical units to give the best all-around performance. For constant high speed running, for example, a condenser capacity can be used which is much less than

(Continued on page 127)

BUILT FOR YEARS OF SERVICE



Schrader Air Chucks are ruggedly built, machined from solid brass rod. They withstand hard usage... are practically indestructible... have only one moving part and are easy to keep in first class condition. The standard sealing washer is easily replaceable without special tools. Schrader Air Chucks are made with an extra large air passage to provide the fastest possible flow of air. This saves you time inflating tires. Extra long life reduces their low initial cost even further. Order through your tire or automotive supplier.



- No. 5492 For 1/2" inside diameter hose.
- No. 5493 For 3/8" inside diameter hose.
- No. 5494 For 5/16" inside diameter hose.
- No. 5495 For 1/4" inside diameter hose.
- No. 5497 Has 1/4" tapered male pipe thread.
- No. 5498 Has 3/8" tapered male pipe thread.
- No. 5499 Has 1/4" tapered female pipe thread.
- No. 5500 For 3/16" inside diameter hose.



Schrader also makes a complete line of adapters, couplings, ferrules and other fittings for air hose.

Schrader

REG. U.S. PAT. OFF.

AIR CHUCKS AND AIRLINE FITTINGS

A. SCHRADER'S SON

BROOKLYN, N. Y.

Division of Scovill Manufacturing Company, Incorporated

A JOBBER'S VIEW

HOW'S BUSINESS?

A MONTHLY REPORT ON MAJOR ITEMS BY 500 JOBBERS

AUGUST, 1940

NATIONAL TOTAL	Good	Fair	Poor	NATIONAL TOTAL	Good	Fair	Poor
ACCESSORIES	Poor			TIRES	Fair		
Abrasives	53	96	22	Casings	11	53	25
Anti-Freeze	14	44	84	Tubes	17	65	26
Car Radio Sets	6	28	70				
Car Radio Accessories	5	24	73	SHOP EQUIPMENT	Poor		
Chains	4	12	116	Battery Charging Equipment	26	64	83
Heaters	7	31	102	Car Lifts	9	42	110
Horns	6	60	82	Car Washers	3	26	125
Lacquers	96	67	17	Compressors	21	76	65
Oil Filters	111	72	14	Drills (Electric)	24	96	59
Oils and Greases	29	85	22	Electric Testing Equipment	18	64	81
Polish	49	107	24	Jacks (Garage)	43	111	33
Seat Covers	60	88	18	Lubricating Equipment	27	85	56
Thermostats	3	27	116	Paint Spray Equipment	22	80	65
REPLACEMENT PARTS	Fair			Tire Service Equipment	2	32	111
Axle Shafts	18	93	65	Tool Kits and Sets	18	82	63
Ball and Roller Bearings	77	99	13	Valve Re'acers	8	57	105
Brake Lining	87	94	16	Wheel Aligners	9	40	104
Bushings	37	104	39	Wheel Balancers	11	52	90
Chains (Timing)	15	86	77	Safety Testing Equipment	3	32	106
Clutch Plates and Parts	75	92	16	Welding Equipment	19	76	66
Fan Belts	123	68	14				
Gaskets	127	58	9	ELECTRICAL UNITS	Fair		
Gears (Rear Axle)	19	85	71	Armatures	38	114	27
Gears (Transmission)	33	93	50	Batteries	64	105	22
Mufflers	141	51	6	Cable (Battery)	70	108	22
Pistons	42	94	43	Coils	49	127	25
Pins	57	101	24	Other Ignition Parts	74	110	17
Rings	111	69	8	Fuses	45	127	26
Radiators and Cores	6	48	85	Ignition Wire and Cables	62	124	17
Spark Plugs	115	82	9	Lamps	65	114	23
Springs (Chassis)	17	75	64				
Valves	60	107	17				
Water Pump Parts	63	100	19				
Engine Bearings	121	52	10				

MOST ACTIVE LINES

August 1940

- Mufflers
- Gaskets
- Fan Belts
- Engine Bearings
- Spark Plugs
- Rings
- Oil Filters
- Lacquers
- Brake Lining
- Ball & Roller Bearings
- Clutch Plates & Parts
- Ignition parts
- Battery Cables
- Lamps
- Batteries
- Water Pump parts
- Ignition Wire and Cables
- Valves
- Seat Covers
- Pins

October 1939

- Mufflers
- Rings
- Gaskets
- Batteries
- Engine bearings
- Spark plugs
- Water Pump parts
- Anti-freeze
- Fan Belts
- Oil filters
- Cable (battery)
- Clutch Plates and Parts
- Ball & Roller Bearings
- Brake lining
- Lamps
- Other ignition parts
- Lacquers
- Ignition wire and cables
- Thermostats
- Heaters

HOW ITEMS ARE RATED

"Most Active Lines" are chosen on the basis of the highest number of jobber reports indicating "Good" for the items selected among the twenty most active lines. "Activity" as used here has no bearing on volume, so the lists should not be interpreted as meaning the lines on which jobbers are enjoying the greatest volume. Most active lines are those which the greatest number of reporting wholesalers indicate are selling "considerably above normal" in their particular markets.

HOW TO READ THIS CHART

Information from which this chart is compiled is obtained monthly from a selected list of 500 wholesalers. Figures show the number of wholesalers reporting. Normal is taken as average sales for this month during the past few years.

Good—Sales considerably above normal.

Fair—Sales slightly above or below normal.

Poor—Sales noticeably below normal.

FOLLOWING is a brief digest of important articles appearing in this issue of MOTOR AGE. Read the digest and discuss the service procedure with your customers:

PAINT TROUBLES—THEIR CAUSE AND CURE

Here's a factual story which will enable the painter to do his own trouble-shooting and find just what caused the job to go sour. Simplifying these difficulties, it will encourage more servicemen to go into this phase of the business.



DON'T BLOW HEAD GASKETS

If servicemen complain about cylinder head gaskets blowing, this story gives the answer by pointing out the value of gasket cements and tension wrenches.

SUPER SERVICE IS GOOD SHOPKEEPING

Good shopkeeping means good management of shop facilities. After establishing regular contact with car owners through gasoline sales and quick services, super servicemen have something more to offer. That something more means that they must be properly equipped to sell lubricants, tune-up, electrical service, brake relines, wheel aligning, frame straight-



ening, paint jobs, body and fender repairs and major overhauls.

HYDRAULIC BRAKE MASTER CYLINDER SERVICE

Fluid leaks at the master cylinder are an indication of a worn or scored brake cylinder. This article gives the approved method of reconditioning the cylinder, replacing check valves and piston cups. Prompts investigation of the brake lines, wheel cylinders and the condition of linings and drums. Special head wrench, cylinder gage, honing equipment and by-pass port burring tools required.

EXHIBIT YOUR PRODUCTS
at the
41st Annual National

AUTO SHOW

GRAND CENTRAL PALACE

NEW YORK—OCT. 12-20

Opens Columbus Day - Oct. 12 - for 9 days

Here, under one roof, in a setting appropriate to the theme of this 1940 presentation "A SALUTE TO THE AMERICAS"—will be shown the newest in passenger cars, representing every important manufacturer in the industry; body work, light trucks, accessories, parts, Diesel engines and safety displays. Dramatized action exhibits, which have proved so popular at recent shows, will be offered in greater variety. Old car exhibits. Buyers, dealers, jobbers, purchasing agents, fleet owners, sales managers, service men, Army and Navy purchasing officials and industrial leaders will attend.

SOME ACCESSORY SPACE AVAILABLE

Write, wire or telephone

NATIONAL AUTOMOBILE SHOW

366 Madison Ave.

New York, N. Y.

ALFRED REEVES, Manager

CUSTOMERS LOST? UP GOES YOUR COST!

Customers pleased? Up go your profits. And so what, you ask?

THIS: WHEN YOU NEED SPARE PARTS AND REPLACEMENTS SPECIFY "SHIP BY RAILWAY EXPRESS", and tell your customers you are doing it. They will know you are using the fastest service you can get for them.

Yes, it's as easy as that. RAILWAY EXPRESS delivers top-speed, at low, economical cost. For service, and all arrangements, phone our local agent. He's a good man to know.

For super-speed deliveries, use AIR EXPRESS
—3 miles a minute, day and night service.

RAILWAY EXPRESS

AGENCY, INC.

NATION-WIDE RAIL-AIR SERVICE



Clean

BODY LUBRICATION WITH DOOR-EASE

● Body lubrication is an essential feature of every thorough lubrication job... and it makes a hit when customers see that you use DOOR-EASE Products for this purpose. DOOR-EASE lubricates without danger of soiling clothing or car upholstery.



...by the makers of
RUGLYDE Penetrating
Rubber Lubricant.



AMERICAN GREASE STICK CO., MUSKEGON, MICH. U. S. A.

Canadian Sales Representatives

COLONIAL TRADERS, Ltd., 144 FRONT STREET W., TORONTO

3-WAY VALUE



No. 1214 Do-Ray Stop and Tail Lamp with Tiger-Ey Hex Flex Reflecting Lens. Has extra heavy enameled steel license bracket and new extension angle bracket. List ...\$2.30

No. 70 The Giant Stoplite — 4 different mounting positions. Over-all dia. 7 7/8". List ...\$4.00

Sturdy-bilt Truck Mirror — with or without clearance lamp. List prices.... \$2.50 to \$3.75

Here's a foglite that's really designed to make driving safer in fog, snow, and mist.

Heavy chrome-plated metal housing, 6 1/2" in diameter, has malleable iron bracket. Locking device protects against pilferage. Styled to harmonize with either old style or 1940 headlamps. Special compensating device accommodates any GLASEAL unit.

Equipped with GE GLASEAL-Beam unit, either white or amber lens. Rotary plastic switch and ten feet of silver colored wire supplied. Do-Ray Lamp Co., 1458 S. Michigan Ave., Chicago.

Ask your
Jobber
or Write

DO-RAY

SAFETY LIGHTING

and

Tiger-Ey • Nobby Reflecting Devices

Clean Floors Right and Save Plenty in The Bargain



GET THE FACTS THAT PROVE IT

Write for your copy of this new collection of performance data in which users of Magnus Cement Cleaner and other Magnus Automotive Cleaning Specialties tell about the results they are now getting compared with previously used methods and materials.

Oily, greasy floors and driveways are dangerous, needless - - and mighty poor advertisements for you.

Get 'em clean and keep 'em clean - - - really clean - - - with

MAGNUS CEMENT CLEANER

It is not only easy to use and easy on the cement surface. It actually adds service life to your floors and whitens them as well as hardening them. You get cleaner floors than you ever had before and you save plenty in the bargain, because the reported experience of users is that Magnus Cement Cleaner goes two to four times as far as ordinary cleaners.

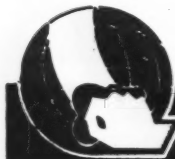
Remember that it is safe. There's never any excuse for using dangerous gasoline for floor cleaning.

MAGNUS CHEMICAL COMPANY

Manufacturers of Cleaning Materials, Industrial Soaps, Metallic Soaps, Sulfonated Oils, Emulsifying Agents and Metal Working Lubricants.

36 South Avenue

Garwood, N. J.



MAGNUS CLEANERS

WALTER P. CHRYSLER

(Continued from page 107)

the board. Chrysler purchased the properties and business of Dodge Brothers Motor Co., Inc., in 1928, and in that year two new Chrysler developments were introduced, the DeSoto and Plymouth.

In recent years, Chrysler had turned over active management of the corporation to younger associates. In 1935, K. T. Keller became president and general manager of the corporation, B. E. Hutchinson, vice-president and chairman of the finance committee, and F. M. Zeder, vice-chairman of the board.

Mrs. Della Forker Chrysler died in 1938. Four children survive. Mrs. Thelma Irene Foy; Mrs. Bernice Garbisch; Walter P., Jr., and Jack.

Charles D. Hastings

Charles D. Hastings, who retired as board chairman of Hupp Motor Car Corp. in 1935, died on Aug. 7. His long career in the automobile business began in 1902 when he became associated with the Olds Motor Works as a salesman. Later he joined the Thomas-Detroit Co., and in 1908 joined Hupp.

CLASSIFIED ADVERTISEMENTS

HI Klonic Hot Oil Motor Flusher. Also does Rears & Trans. Demonstrator. Slightly used. Guaranteed condition. A real money maker for modern station. W. J. Buck, 6400 Torresdale Ave., Phila., Pa.

FOR SALE—COLLECTION OF MATERIAL ON OLD AUTOS AND AUTO RACING, CONTAINING COUNTLESS CLIPPINGS, PHOTOS, ETC., FROM 1910 to 1940. MUST SELL AS QUICKLY AS POSSIBLE FOR FINANCIAL REASONS. PRICE \$100.00 FOR ENTIRE COLLECTION—CASH. HOWEVER, WILL SELL PARTS OF IT FOR NO LESS THAN \$10.00 PER LOT OF MATERIAL. FOR PARTICULARS, WRITE TO L. SWEENEY, 180 WESTWOOD DRIVE, WESTWOOD PARK, SAN FRANCISCO, CALIF.

Are You Missing a Bet?



EVER think of the extra profits you could be making if your shop were equipped to balance wheels? Practically every car that comes into your shop needs this service. L & H Balancing Weights are being installed to the tune of millions a year. Why not get your share of this business? Write and get the low-down! (Pat. No. 2036757.)

HARLEY C. LONEY CO.

16883 Wyoming
Detroit, Mich.

Write for
Literature!

L & H Wheel Balancing Weights

RETREADS



PRICED TO FIT THE PURSE!

For the customer who is seeking an efficient, economical, solution to his worn tire problem, suggest SKINNER RETREADS. Safety, appearance and performance . . . all at a price to fit any purse.

Write today for full details.

SKINNER TIRE & RUBBER CO.

Springfield, Ohio

SKINNER

FOR THE OIL GASOLINE & WATER CONNECTIONS

VELLUMOID

Make Quality Gaskets as Needed From Sheet VELLUMOID

A knife or ball peen hammer, and every gasket is at your elbow. You can rely on VELLUMOID.

Sold through Jobbers.

The Vellumoid Co., Worcester, Mass.



Here's a fuel pump...

Correctly engineered for replacement on cars, busses and trucks (including 1940 models), AIRTEX Fuel Pumps are guaranteed for operation and performance, are quality pumps built for lasting service.

Don't give your good customers old, second-hand rebuilds when you can install brand new AIRTEX Fuel Pumps at approximately the same cost—and still get a substantial allowance from your jobber for old pumps.

**Replacement
FUEL PUMPS
for all
Popular Cars**

Check these FEATURES:

- ✓ A 50,000 mile guaranteed AIRTEX Diaphragm in every pump.
- ✓ Hardened and ground Rocker Arms with well-finished, tested castings.
- ✓ Properly engineered parts for perfect internal coordination.
- ✓ Tested for rocker arm position, pressure maintenance, and suction.
- ✓ Each unit attractively boxed, ready for installation.

Ask your Jobber today about AIRTEX Replacement Fuel Pumps for all cars.

CHEFFORD MASTER MANUFACTURING CO. INC.
FAIRFIELD ILLINOIS

This Equipment . . . for MORE and FASTER PROFITS

FREE TO YOU!



Speed up your work—and PROFITS—with this new, convenient, time-saving **RADIATOR DRAIN COCK**

OPENER—specially designed to open practically all radiator drain cocks that are hard to reach with regular wrenches or pliers.

Get ready for Anti-Freeze Business and Fall Service on Cooling Systems. Make up your own assortment of Warner-Patterson Cooling System Products. And give your order to your supplier TODAY.

FREE—this Radiator Drain Cock

Opener—with a regular supply of ANY 2 dozen cans of any of these Warner-Patterson Products:

Warner Liquid Solder
Warner Radiator Cleaner
Warner Cooling System Protector

WARNER-PATTERSON COMPANY
920 South Michigan Avenue • Chicago, Illinois



Works Like Dynamite!

Effective hot or cold tank carburetor and fuel pump cleaner may be made from regular **GUNK CONCENTRATE R36** and low cost chlorinated and lacquer thinner type solvent diluents.

Chemical laboratory formula bulletins telling you how to make it and where to get the proper diluents are available without charge to **GUNK** users.

Hot tank solutions are for those who are impatient for quick results. Cold tank solutions work just as well, are simple, low in cost, but slower.

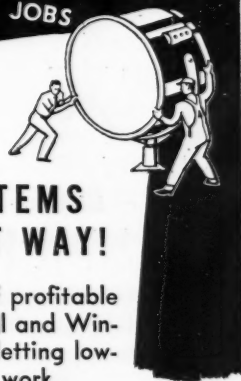


The CURRAN CORP.
MALDEN

HEADQUARTERS
for SELF
EMULSIFYING
SAFETY
SOLVENTS

MFG. CHEMISTS
MASS.

NEW LIGHT ON YOUR CLEANING JOBS



CLEAN COOLING SYSTEMS THIS SAFE, LOW-COST WAY!

Are you all set to get your share of profitable cooling system clean-out jobs this Fall and Winter? You can be . . . easily . . . by letting low-cost, vigorous Oakite cleaning do the work.

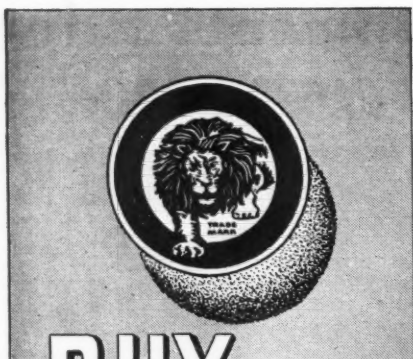
For Oakite materials are **SAFE** to use . . . quickly rid cooling systems of muck, loose rust and foreign matter. Jackets and radiators are clear and clean . . . ready for any anti-freeze solutions. **AND NOTE:** Clean built-in car hot water heater coils simultaneously. Write for **FREE** 36-page booklet giving details on this and a dozen other money-saving shop cleaning tips.

Manufactured only by

OAKITE PRODUCTS INC., 24C THAMES ST., NEW YORK, N. Y.
Representatives in All Principal Cities of the U. S. and Canada

OAKITE Certified CLEANING

MATERIALS & METHODS FOR EVERY CLEANING REQUIREMENT



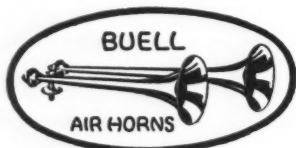
BUY at the sign of the **LION**

for Dependable
Quality Automotive
Parts, Supplies,
and Accessories

Write for Our New 1940 Catalog—Just off the Press

LION AUTO PARTS & MFG. CO. Inc.
1920 S. MICHIGAN AVE. CHICAGO, ILL. 2214-16 MAIN ST. DALLAS, TEXAS

New Branch: 1239 Osborne St., Montreal, Canada



The finest warning signal
made—Musical, but power-
ful—Instant Response, but
delicate when desired.

**SOUND RANGE 1 to 10
MILES**

Built for years of service.

Transferred from car to car.
Beautiful Band Instrument Bells.
Many Models for cars, boats and
streamliners.

Standard equipment on Greyhound
Buses.

Write for Literature

BUELL MANUFACTURING CO.
2991 Cottage Grove Ave.
Chicago, Illinois

Producers of Warning Signals for 28 Years

TRADE MARK
NOC-OUT
HOSE CLAMPS

THE HOSE CLAMP
WITH THE
THUMB SCREW

For fast, dependable hose con-
nections, use NOC-OUT Hose
Clamps . . . standard in the
automotive industry for many
years for their leakproof, trouble-
free sealing features. Quick
tightening thumb screw provides
equal pressure all around. Type
"A" Adjustable . . . fits many
hose sizes. Type GRB heavy
duty, solid band for Booster
Brakes. Type HP for all high
pressure air and gas lines.

Sold by dealers and jobbers
everywhere.

WITTEK MFG. CO.
4305 W. 24th PL., CHICAGO, U.S.A.

DO IT RIGHT

(Continued from page 64)

the job didn't set the lock properly, and when the lady was over seventy-five miles from anyone who could do the job, the door took to swinging open suddenly, with what might have been disastrous results.

Then there's the very sad case of the nice young couple who were going on a long-anticipated week-end. Their car went into a body shop at 8:00 A. M. on the preceding Monday for what they were told would be a three-day job. So as not to hurry the gentleman they said they wouldn't need the car until Friday noon (half again as much time as was asked). When the car failed to appear on Friday a phone call revealed that the delay was unavoidable, but that they'd have the car by Saturday noon without a doubt. They left that garage at 5:30 Saturday evening, having spent the first day of a two-day week-end in a hot garage, and their first night, driving to their destination.

We all know that this sort of incident is exceptional. Unfortunately it's not exceptional enough. Too many people encounter them too often, and down goes service volume, into the ash can goes the serviceman's reputation.

If you treat the old customers right and keep them coming back, you'll find you won't need to spend so much time looking for new ones.

\$8,000,000 Earmarked For Packard Motor Co.

Information given a Congressional committee on Aug. 8 by Federal Loan Administrator Jesse H. Jones is that around \$8,000,000 has been earmarked for the Packard Motor Co., for expanding its facilities to manufacture Rolls Royce aircraft engines.

This amount will be made available, Jones said, out of a total of \$150,000,000 to \$200,000,000 for which the Reconstruction Finance Corp. has made "informal but definite commitments" for the construction of new airplane plants. The balance will be loaned to leading aircraft manufacturing companies.

**BLUE CROWN
SPARK PLUGS**

**AIR
COOLED**

**FINNED SHELL
SAVES GAS**

Ask your Jobber
MOTOR MASTER PRODUCTS CORPORATION
4757 Ravenswood Ave., Chicago, U.S.A.
Export Distribution
BORG-WARNER INTERNATIONAL CORP., Chicago

**IT'S KELLOGG
for Economy**

- **AIR COMPRESSORS**—Exclusive cushion mounting deadens noise; gives operating economy.
- **ONE-END LIFTS**—Faster and better on jobs below body; save labor.
- **CAR WASHERS**—Hardie-Kelloggs use solutions plus pressure for faster, better washing.

KELLOGG
DIVISION OF THE AMERICAN
BRAKE SHOE & FOUNDRY CO., ROCHESTER, N. Y.

**NEW! VALLEY
SUPERDUTY CHARGERS**

Fully Guaranteed for Two
Years—Valley, modernized
superduty chargers will give
you the utmost in value . . .
enable you to cash in on the
big profits in battery charging.
Valley chargers are
easy to operate . . . no
moving parts . . . connecting
to the lighting circuit. Low
in operating cost. Order
yours today.

Charges 1 to 12 6 volt
batteries—\$28.00.

Valley Electric Corp.
4221 Forest Park Blvd. • St. Louis, Mo.

Play Safe! Use Only

PURITAN
The Genuine REFILL
BRAKE FLUID

Mixes with ALL Others

Distributed through N. A. P. A. Warehouses

ARO

**SPEED
COUPLER**
Makes Each
Air Hose Do
Multiple Duty
FAST • DEPENDABLE

Ask Your
ARO Jobber!
**THE ARO
EQUIPMENT
CORPORATION
BRYAN, OHIO**

PUSH ON
PULL OFF

NO. 210
SPEED
COUPLER

Follow THE PREDICAMENTS OF~
CHARLOTTE SOUTHERN (WOMAN DRIVER)



SOUTHERN
FRICTION MATERIALS CO.-CHARLOTTE, N.C.

BUY FROM YOUR JOBBER
ON THE "ONE-CONTRACT"
AUTOMOTIVE EQUIPMENT PLAN



COMMERCIAL CREDIT COMPANY
Baltimore



The unchallenged leadership of Gardiner Flux-Filled Solders is due to the faster, cleaner, more dependable work assured by their high tensile strength, quick-acting flux and uniform quality. Line includes Solid Wire, Bar and Body Solders, and Permanent Lining Babbitt Metal.



4839 S. Campbell Ave., Chicago, Ill.

YOU'LL NEVER KNOW

● THE PROFIT OPPORTUNITY in Fitzgerald Gaskets until you handle them.

THE FITZGERALD MFG. CO., TORRINGTON, CONN.

FITZGERALD GASKETS

CHECK CONDENSERS

(Continued from page 115)

would be used for taxi-cab work, for example.

Examination of the breaker points is a good indication of too little or too much condenser capacity. A condenser with too little capacity has not enough surface area to absorb the charge when the breaker points open. Therefore, the current arcs across the breaker points causing them to pit. Some mechanics blame the breaker points for not "standing up" whereas in reality the trouble is under-capacity condensers.

In Fig. 6, is shown the effect on breaker points of an under-capacity condenser. The crater or small depression is on the negative contact point. This condition holds true with a positively grounded movable arm.

In Fig. 7, is shown the effect on breaker points of an over-capacity condenser. The illustration considers the contact point on the movable arm to be positively grounded. In this case the crater forms on the positively grounded contact. If there is too much condenser capacity the energizing period or "building up" time of the coil is reduced and the spark is weak, particularly at high speed. Such condensers absorb so much current that not enough will be returned quickly to the coil to produce enough voltage for a strong spark.

Two troubles which can occur with a condenser are, short circuit or open circuit. To check for a shorted condenser the service man can use an ordinary voltmeter. This can be done by disconnecting the primary cable at the distributor and placing one test point of the voltmeter on the disconnected terminal and the other voltmeter test point on the connection from which the terminal was removed, Fig. 8. The breaker points are blocked open with a piece of fiber. The ignition switch is closed and any indication on the voltmeter shows that the condenser is shorted. If no reading is present the condenser is not shorted. A test lamp also can be used in making this test. Thus, if the light does not burn the condenser is not short-circuited.

An open circuit condenser is usually

(Continued on page 128)

The most important thing about oil is...

KEEP IT CLEAN with
PUROLATOR

MOTOR IMPROVEMENTS, INC.
Newark, N. J.

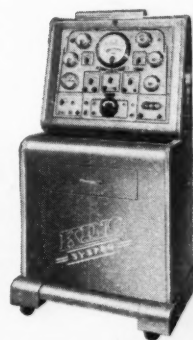
The new **"KING"**
AIR-OIL MOTOR FLUSHER
for only **\$24.75** COMPLETE

With the use of COMPRESSED AIR the "KING" AIR-OIL Motor Flusher (patented) breaks up the gum or sludge that couldn't possibly be removed with oil alone. The air jet is adjusted for both height and direction which permits washing any part of crank case. The agitation is done by the "KING" AIR-OIL Motor Flusher and not by the motor. A minimum amount of oil is used because the job can be done with LESS than a normal oil capacity rather than with MORE than normal capacity as required by most systems. This eliminates the danger of flooding the clutch housing. It is easy to operate, only requires a few minutes to do a first-class job. This improved flusher will do a better job than more expensive equipment. It not only makes money on flushing jobs, but it also increases the sale of oil and oil filters. IT WILL PAY TO INVESTIGATE.



The
AIR-OIL
BREAKS UP
THE
SLUDGE
Patented

Look what you get for only **\$320.00**



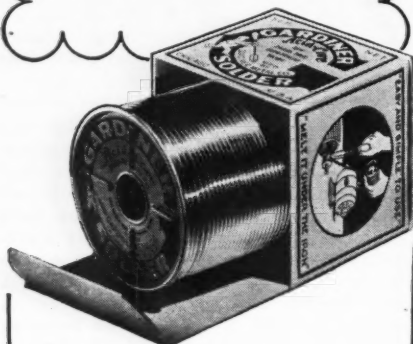
The "KING" K-625 is a NEW STREAMLINED TESTING UNIT that not only out-performs other units at much higher prices but also looks like a million dollars. It makes every conceivable motor and ignition test. The Electronic Cam Angle Motor (patent applied for) tests and adjusts distributors quickly and accurately. The Electro-Tach (or R. P. M. Indicator) simplifies timing of the ignition and carburetor adjusting. The Exhaust Gas Analyzer makes it possible to detect waste of gas. The All-electric Spark Plug

Tester (patented) does not require compressed air. Here is a tester bargain that will soon pay for itself in any shop.

Ask our Jobber or Write us Jobber's Name

The ELECTRIC HEAT CONTROL CO.
9123 INMAN AVE. CLEVELAND OHIO
KING Good Products Since 1914 **KING**

Sets the Pace FOR QUALITY and ECONOMY



● The quick-acting flux of Gardiner Acid-Core Solder permits exceptionally fast, clean work. Unusually high tensile strength insures lasting bonds. Yet, thanks to modern methods exclusive with Gardiner, these better solders are low in first cost and most economical to use. Other Gardiner products famous throughout the automotive industry for top performance and bottom cost are Solid Wire, Bar and Body Solders . . . and Permanent Lining Babbitt metal.



4839 S. Campbell Ave., Chicago, Ill.

MILES of SMILES



ON
TIMKEN BEARINGS

FOR —
AUTOMOBILES
TRUCKS
TRAILERS
AND
BUSES

★
THE TIMKEN ROLLER BEARING CO.
CANTON, OHIO

CHECK CONDENSERS

(Continued from page 127)

due to broken leads, a poor ground or bad connection inside. One of the most accurate ways to check for an open circuit is to use a capacity meter. If the condenser is not "open" the meter hand deflects several graduations. A test lamp also can be used and occurrence of a discharge spark indicates that the condenser is not open.

In the absence of approved testing means the only alternative is to substitute a new condenser of the correct size or capacity and if better performance is obtained the necessary replacement should be made.

It is important that the ground connection as well as the pig-tail terminal of the condenser be tight. A poor ground connection causes the condenser to show up as being defective on test as well as to function poorly in the ignition system. It is not always true that burned or oxidized breaker point contacts are due to an improperly operating condenser. More likely high primary voltage, over-charged battery or excessive oil vapor in the distributor or on the contact surface increases the normal rate of wear on them.

Serviceman's Bric-a-brat Worth Fifty Thousand Bucks

An Ohio service station operator suddenly finds himself, at 23, vice-president and one-third owner of a unique glass-sculpturing company.

Back in kid days he had learned the little-known art of glass sculpture, which is totally different from glass-blowing. During slack times at the station he developed his boyhood hobby and placed a few pieces in the window.

A Pittsburgh motorist who admired the display while his car was being fueled carried away some samples and returned with an order for 1600 pieces like them "as soon as possible." Fifty thousand dollars' worth of sculptured glass, ranging from candlesticks to ships were sold in the first year.

Now the sculptor is busy teaching the knack of molding tough glass to 12 hardworking apprentices. He uses a special mixture of gas for molding the glass into malleable form.

YOU CAN'T BEAT THIS Signal-Stat COMBINATION



PAT. PEND.

Advertised in
Commercial Car
Journal & Fleet Owner

BURN-OUT PROOF SWITCH

The only burn-out proof directional signal switch. Install with a complete set of Signal-Stats or as a replacement for any make of directional signals.

DIRECTIONAL LAMPS

Sturdily built lamps with aluminum reflectors, non-breakable acetate faces. Available in double-face, single-face and flush type units.

Unconditionally
GUARANTEED!

SIGNAL-STAT CORPORATION

68 JAY STREET BROOKLYN, N. Y.

Are You Neglecting This Sales Opportunity?

**DETROIT
HARRY HENDERSON**

New Embossed Aluminum

LICENSE NAME PLATES

In 2 colors or with natural aluminum letters.
100 Embossed Plates \$ 18.00 Plain \$13.50
200 Embossed Plates \$ 29.00 Plain \$25.00
300 Embossed Plates \$ 39.00 Plain \$35.00
500 Embossed Plates \$ 60.00 Plain \$50.00
1000 Embossed Plates \$100.00 Plain \$90.00
Cash orders shipped prepaid. Otherwise send 25% with order. Indicate copy, layout and choice of colors.

ADVERTISING SPECIALTIES, INC.
3120 MONROE ST. TOLEDO, OHIO

NEW SpeedWay 1 1/2" No. 89 DRILL

Full size, full weight, full capacity. Specially wound, high torque 115 V Universal 500 r.p.m. SpeedWay Drill Motor. Forced air cooling, oilless bearings, new natural grip breast plate and removable side handles. Streamlined die cast case. If your dealer can't supply, order direct on 10 day trial.

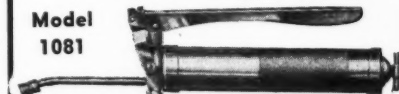


SpeedWay Mfg. Co., 1880 S. 52nd Ave., Cicero, Ill.

New LINCOLN KLEENSEAL LEVER GUN

lists at only \$4.00

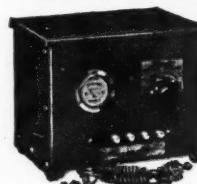
Model
1081



Ask your Lincoln jobber salesman, or write us for details on Model 1081 and other items in complete line which includes hand guns, lever guns, air and electric operated lubricant dispensing units, and full line of grease fittings.

LINCOLN ENGINEERING COMPANY
General Offices, St. Louis, Mo.

Handy BATTERY CHARGERS



New, improved ventilation—cool, low-cost operation and longer life. 2 YR. GUARANTEE. Get Bulletin #4 on Complete Line. At left: 12-Batt. Size less bulb

\$2800
BALDRELECTRICCO.
4375 Duncan Ave.,
ST. LOUIS, MO.

For Seals of Security

Industry depends on...

VICTOR
GASKETS, OIL SEALS, GREASE RETAINERS